

**Appendix C**

**Traffic Technical Report**

**IMPERIAL BEACH ECO BIKEWAY  
TRAFFIC IMPACT STUDY**

February 2008

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## CHAPTER 1 THE PROJECT

This traffic impact analysis has been prepared for the proposed Imperial Beach Eco bikeway on *Palm Avenue*. The proposed project is located in the *City of Imperial Beach* west of *I-5* and south of the *Silver Strand Boulevard* which is the *SR-75*. The proposed project is an extension of *Palm Avenue* which connects *I-5* on its east and the beach on its west.

Figure 1-1 shows the project vicinity and study area.

### PROJECT DESCRIPTION

The proposed project consists of the reclassification of *Palm Avenue* between *Third Street* and *Seventh Street*, from a four-lane collector to a two-lane collector with a two-way left turn lane. This reclassification will allow for modifications to existing motor vehicle travel lanes, parking areas, medians, landscaping, sidewalks, curbs, gutters, signs, and the addition of Class 2 bicycle lanes along *Palm Avenue*. The purpose of the project is to provide an improved bicycle connection between the Bayshore Bikeway, the beachfront, and other points of interest in Imperial Beach. The proposed bicycle lanes, traffic calming measures, and associated improvements within the *Palm Avenue* right-of-way were proposed to create this section of the Imperial Beach Eco Route Bikeway proposed in the City's 1994 General Plan Circulation Element. The proposed project generally reduces the number of vehicular lanes on *Palm Avenue* between *3<sup>rd</sup> Street* and *Rainbow Drive* from four to two with one lane in each direction, and from four to three lanes from *Rainbow Drive* to *7<sup>th</sup> Street* with two lanes in the westbound direction and one lane in the eastbound direction. The curbside lane in the westbound direction between *Rainbow Drive* and *7<sup>th</sup> Street* is converted from a through lane to an exclusive right turn lane. The reduction in the lanes will accommodate a bike lane on both sides between *3<sup>rd</sup> Street* and *Rainbow Drive* and in the eastbound direction between *Rainbow Drive* and *7<sup>th</sup> Street*. The left turn lanes are retained for the proposed configuration. Bike signs will be added along *7<sup>th</sup> Street* to designate the bike route and connect the *Palm Avenue* section to the Bayshore Bikeway.

### STUDY AREA

The study area for this project includes the intersections and roadway segments between *3<sup>rd</sup> Street* and *7<sup>th</sup> Street* which are proposed to be reclassified. The study area is shown in Figure 1-1. The specific study area includes seven intersections and two roadway segments:

#### Roadway Segments

- *Palm Avenue* between *3<sup>rd</sup> Street* and *Rainbow Drive*.
- *Palm Avenue* between *Rainbow Drive* and *7<sup>th</sup> Street*.

#### Intersections

- *Palm Avenue* and *3<sup>rd</sup> Street*
- *Palm Avenue* and *4<sup>th</sup> Street*
- *Palm Avenue* and *Corvina Street*
- *Palm Avenue* and *5<sup>th</sup> Street*
- *Palm Avenue* and *Rainbow Drive*
- *Palm Avenue* and *Carolina Street*
- *Palm Avenue* and *7<sup>th</sup> Street*

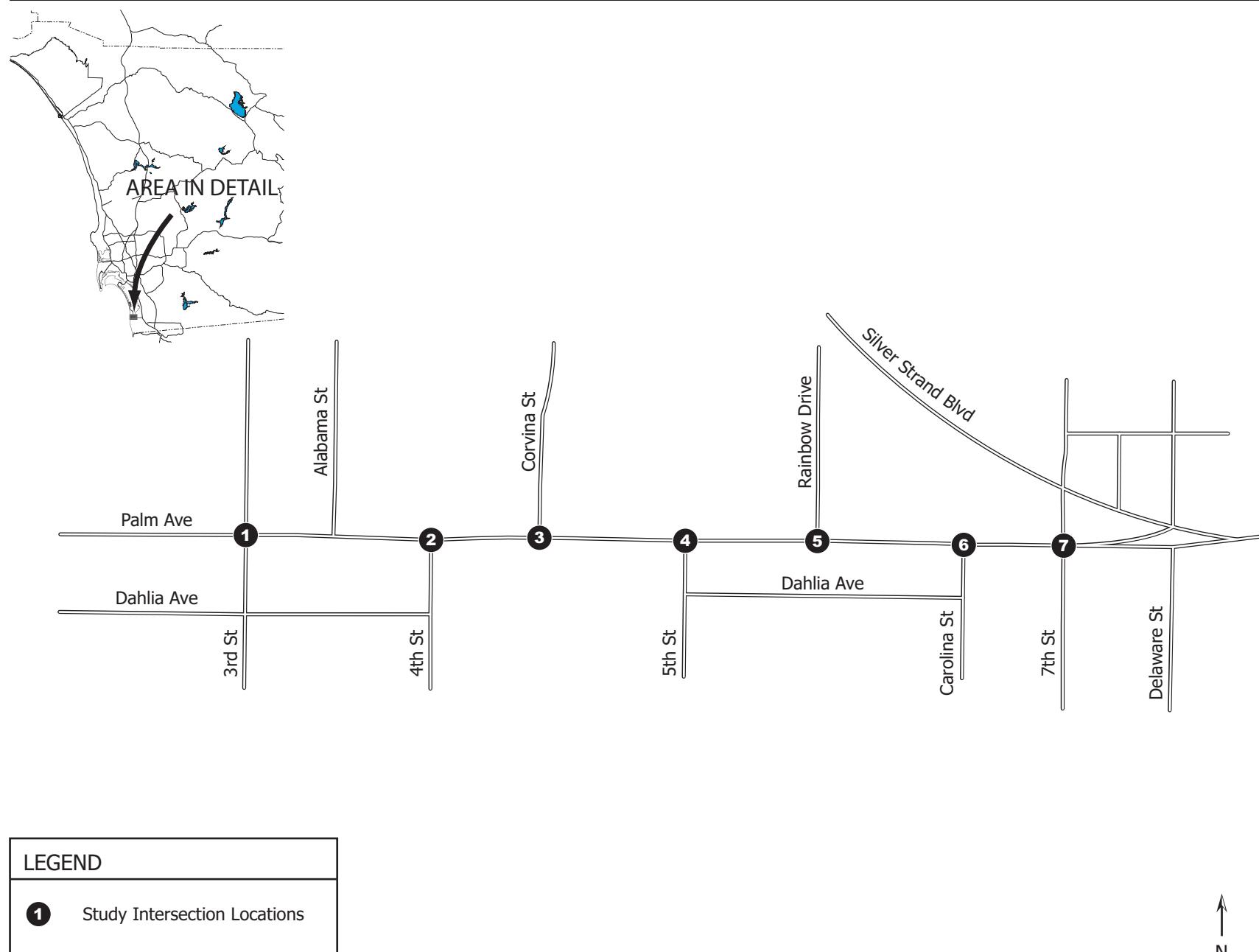


Figure 1-1  
Project Study Area

## CHAPTER 2

### METHODOLOGIES

This chapter documents the methodologies and assumptions used to conduct the traffic impact analysis for the project. The study methodology and analysis is based on the San Diego Traffic Engineers' Council (SANTEC Guidelines). These guidelines are used to determine the project's potential significant impacts. This section contains the following background information:

- Study scenarios
- Capacity analysis methodologies

#### STUDY SCENARIOS

This report presents an analysis of the following analysis scenarios:

- Existing Conditions without Project
- Existing Conditions with Project
- Horizon Year Conditions without Project (Year 2030)
- Horizon Conditions with Project (Year 2030)

#### ANALYSIS METHODOLOGIES

Street system operating conditions are typically described in terms of "level of service." Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). A more detailed description of the concepts described in this section is provided in Appendix A of this document. The following methods are outlined in this publication and used in this study.

##### Roadway Segment Capacity Analysis

SANTEC has published daily traffic volume standards for roadways within its jurisdiction. To determine service levels on study area roadway segments, we compared the appropriate average daily traffic thresholds for level of service to the daily capacity of the study area roadway segments, and the existing and future volumes in the study area. The thresholds for determining level of service used in this analysis are summarized in Appendix A.

##### Roadway Segment Capacity Analysis – Florida Method

In addition to the roadway segment capacity analysis based on the SANTEC methodology, segment capacity analysis is performed based on the Florida method as a second analysis of the roadway segment condition. This method is based on the peak hour segment volume comparison with the threshold capacities. As the worst case condition occurs during the AM and PM peak hours, this method is used as a reasonable way to evaluate the LOS of the segment. A table to determine the level of service is given in Appendix A.

##### Intersection Capacity Analysis

The analysis of peak hour intersection performance was conducted using the Traffix analysis software program, which uses methodologies defined in the 2000 Highway Capacity Manual (HCM) to calculate results. Level of service (LOS) for intersections is determined by control delay. Control

delay is defined as the total elapsed time from when a vehicle stops at the end of a queue to the time the vehicle departs from the stop line. The total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue. **Appendix A** lists the HCM delay/LOS criteria for both signalized and unsignalized intersections.

### **Signalized Intersections**

The HCM analysis methodology for evaluating signalized intersections is based on the “operational analysis” procedure. This technique uses 1,900 passenger cars per hour of green per lane (pcphgpl) as the maximum saturation flow of a single lane at an intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition (e.g., the percentage of vehicles that are trucks) and shared lane movements (e.g., through and right-turn movements from the same lane). Average control delay is calculated by taking a volume-weighted average of all the delays for all vehicles entering the intersection.

### **All-way Stop-controlled (AWSC) Intersections**

The HCM analysis methodology for evaluating all-way Stop-controlled intersections is based on the degree of conflict for each independent approach created by the opposing approach and each conflicting approach. Level of Service for AWSC intersections is also based on the average control delay. However, AWSC intersections have different threshold values than those applied to signalized intersections. This is based on the rationale that drivers expect AWSC intersections to carry lower traffic volumes than at signalized intersections. Therefore, a higher level of delay is acceptable at a signalized intersection for the same LOS.

### **Two-way Stop-controlled (TWSC) Intersections**

The HCM analysis methodology for evaluating two-way Stop-controlled (TWSC) intersections are based on gap acceptance and conflicting traffic for vehicles stopped on the minor-street approaches. The critical gap (or minimum gap that would be acceptable) is defined as the minimum time interval in the major-street traffic stream that allows intersection entry for one minor-street vehicle. Average control delay and LOS for the “worst approach” are reported. Level of service is not defined for the intersection as a whole.

### **Analysis of Significance**

To determine direct project impacts, the SANTEC has developed a series of thresholds based on allowable increases in volume-to-capacity ratios that become more stringent as level of service worsens. Appendix A summarizes these thresholds. The acceptable level of service for roadway segments is LOS “C” or better with a peak hour intersection acceptable level of service “D” or better. Where roadway segments would operate at LOS D, E or F, and the increase in v/c is greater than 0.02, the determination of significance (Yes/No) will be shown in bold type to indicate a significant project impacts for the with project scenario that requires mitigation. Where intersections would operate at LOS E or F and the increase in delay is greater than two seconds, the determination of significance (Yes/No) will be shown in bold type to indicate a significant impact from the project scenario that requires mitigation.

## CHAPTER 3

### EXISTING CONDITIONS

#### TRAFFIC VOLUMES

The intersection turning movement counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM and during the weekday evening peak period from 4:00 PM to 6:00 PM in April 2007. Average daily traffic volumes were obtained through machine data collection. The resultant existing weekday morning and evening peak hour intersection volumes are shown in Figures 3-4 and 3-5. The daily traffic volumes are shown in Figure 3-3.

#### ROADWAY NETWORK

The principal roadway in the project study area is described briefly below. The description includes the physical characteristics, adjacent land uses, and traffic control devices along the roadway. The existing roadway geometry and control conditions are shown in Figure 3-1. Additional details regarding specific intersection operating conditions can be found on the capacity analysis worksheets in the Appendix.

*Palm Avenue* runs east/west direction, extending the street west of the *Silver Strand Boulevard* and leading to the beach. It has a functional classification of four lane collector with two lanes in each direction and a two way left turn lane with median islands at some places. The street operates at a speed limit of 35 mph. *Palm Avenue* provides access to the driveways located both north and south sides of the street which comprise of single and multi family dwellings. The project area is connected to the *Silver Strand Boulevard* north of the street, by *7<sup>th</sup> Street* and *Rainbow Drive* west of the intersection of *Palm Avenue* and the *Silver Strand Boulevard*. The main access to the Naval Radio Receiver Facility (NRRF) is located north of the Project between *2<sup>nd</sup> Street* and *3<sup>rd</sup> Street*. The project area also serves as part of the 933 and 934 bus routes with four bus stops in each direction.

#### EXISTING AND EXISTING PLUS PROJECT ANALYSIS

The effect of the proposed project was compared with the without project scenario for both segments and intersections and are shown in Table 3-1 and 3-2 respectively

**Table 3-1**  
**Existing Roadway Segment Conditions – SANTEC Method**

Roadway Segment	Existing Without Project				Existing With Project				$\Delta$ V/C	Significant ?
	Lanes/Class	ADT	V/C	LOS	Lanes/Class	ADT	V/C	LOS		
<b>Palm Avenue</b>										
3rd Street to Rainbow Street	4/Collector	12,502	0.42	B	2/Collector w/TWLTL	12,502	0.83	D	0.42	No
Rainbow Drive to 7th Street	4/Collector	13,953	0.47	B	3/Collector w/TWLTL	13,953	0.80	D	0.33	No

**Existing Roadway Segment Conditions – Florida Method**

Roadway Segment	Existing Without Project				Existing With Project				$\Delta$ V/C	Significant ?
	Lanes/Class	Peak Hr Vol	V/C	LOS	Lanes/Class	Peak Hr Vol	V/C	LOS		
<b>AM Peak Hour</b>										
3rd Street and Rainbow Street	FL 4-Divided	798	0.26	C	FL 2-Divided	798	0.51	C	0.26	No
Rainbow Drive and 7th Street	FL 4-Divided	1,086	0.35	C	FL 3-Divided	1,086	0.60	D	0.25	No
<b>PM Peak Hour</b>										
3rd Street and Rainbow Street	FL 4-Divided	911	0.29	C	FL 2-Divided	911	0.59	C	0.29	No
Rainbow Drive and 7th Street	FL 4-Divided	990	0.32	C	FL 3-Divided	990	0.55	C	0.23	No

**Table 3-2**  
**Existing Intersection Conditions**

Intersection	Existing Without Project		Existing with Project		$\Delta$ Delay	Significant
	Delay	LOS	Delay	LOS		
<b>AM Peak Hour</b>						
Palm Ave. and 3rd St.	11.2	B	12.3	B	1.1	No
Palm Ave. and 4th St.	11.5	B	13.3	B	1.8	No
Palm Ave. and Corvina St.	13.1	B	15.9	C	2.8	No
Palm Ave. and 5th St.	12.8	B	16.4	C	3.6	No
Palm Ave. and Rainbow Dr.	21.1	C	21.3	C	0.2	No
Palm Ave. and Carolina St.	20.5	C	20.0	C	-0.5	No
Palm Ave. and 7th St.	18.9	B	18.9	B	0.0	No
<b>PM Peak Hour</b>						
Palm Ave. and 3rd St.	11.1	B	13.2	B	2.1	No
Palm Ave. and 4th St.	12.7	B	14.8	B	2.1	No
Palm Ave. and Corvina St.	13.2	B	15.9	C	2.7	No
Palm Ave. and 5th St.	10.6	B	12.4	B	1.8	No
Palm Ave. and Rainbow Dr.	22.0	C	17.2	C	-4.8	No
Palm Ave. and Carolina St.	14.8	B	15.0	B	0.2	No
Palm Ave. and 7th St.	18.1	B	18.1	B	0.0	No

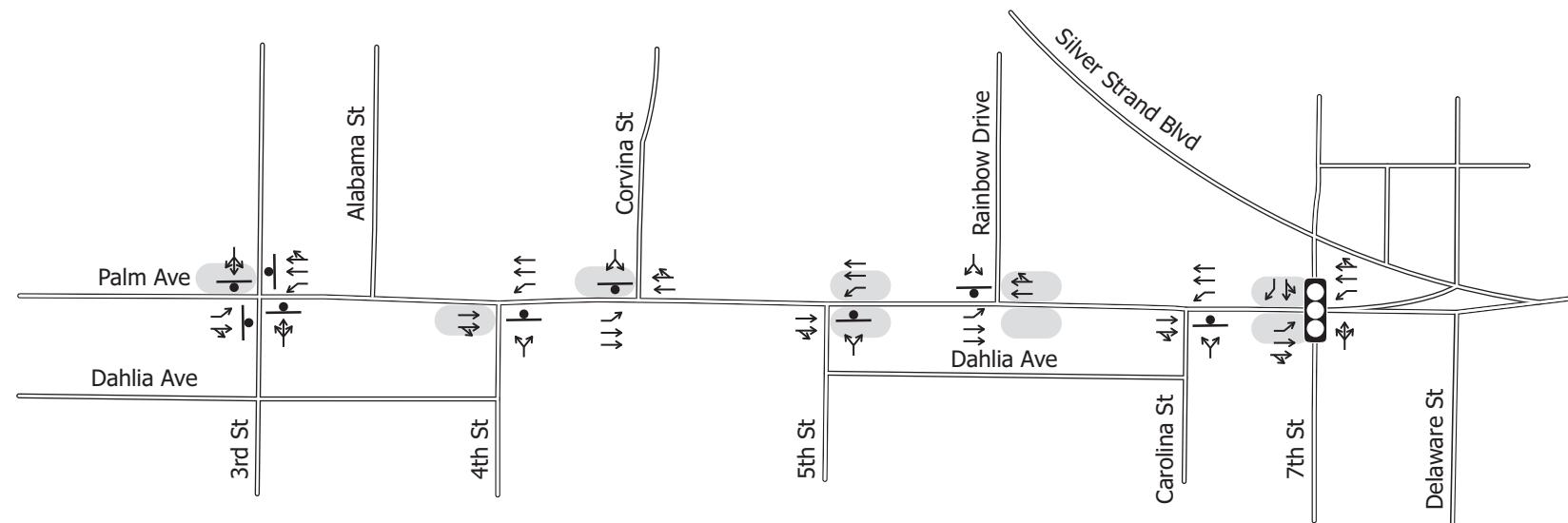


Figure 3-1  
Existing Geometry Configuration

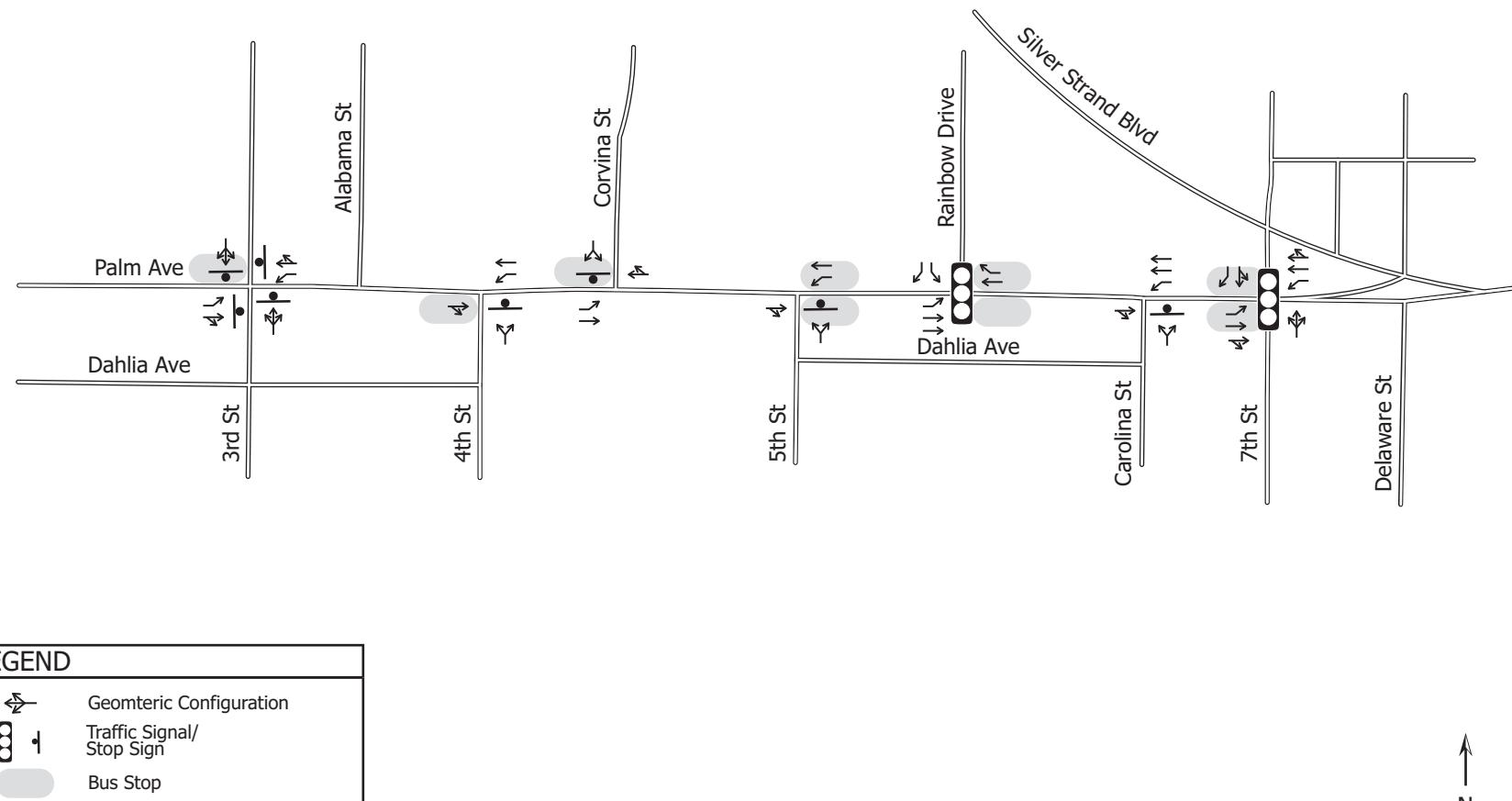


Figure 3-2  
Proposed Geometry Configuration

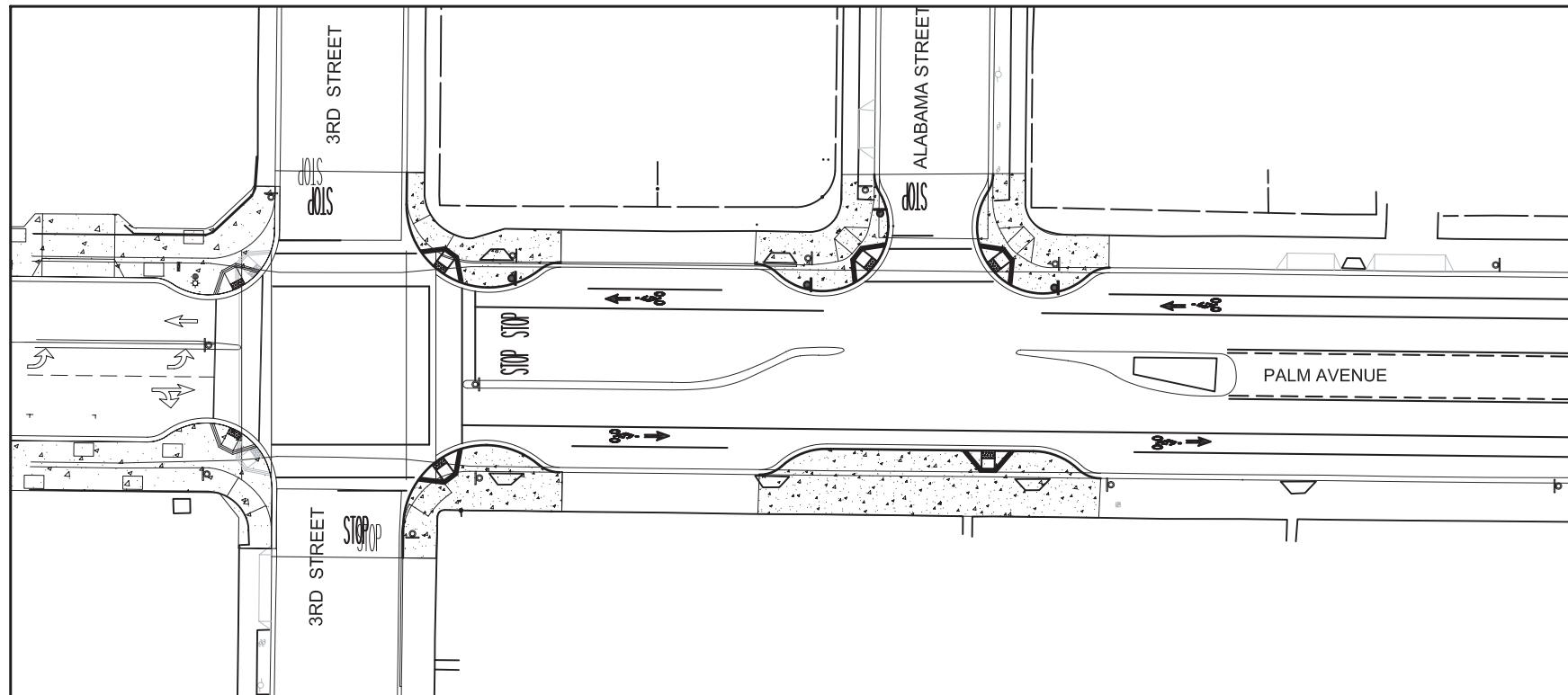


Figure 3-3.1  
Proposed Conceptual Design

N

Not To Scale

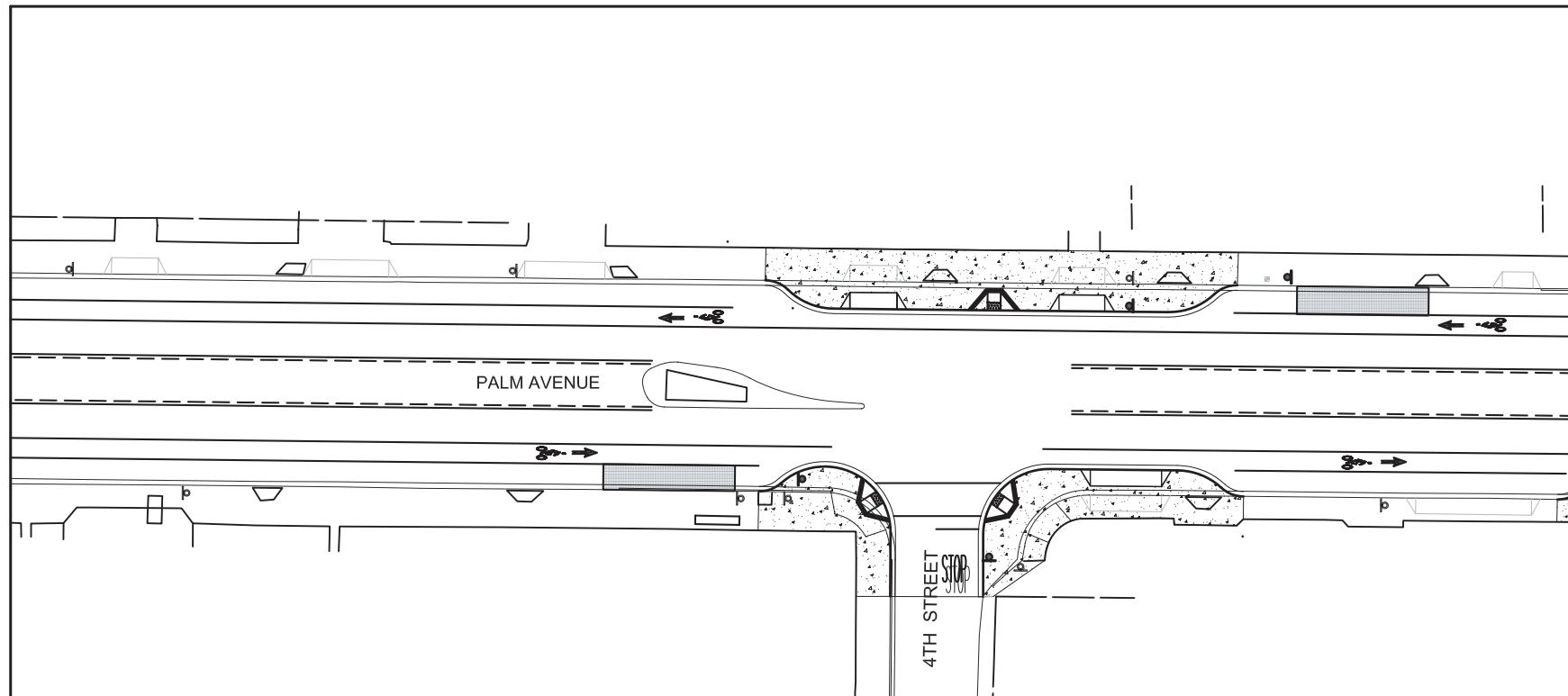


Figure 3-3.2  
Proposed Conceptual Design

N  
↑

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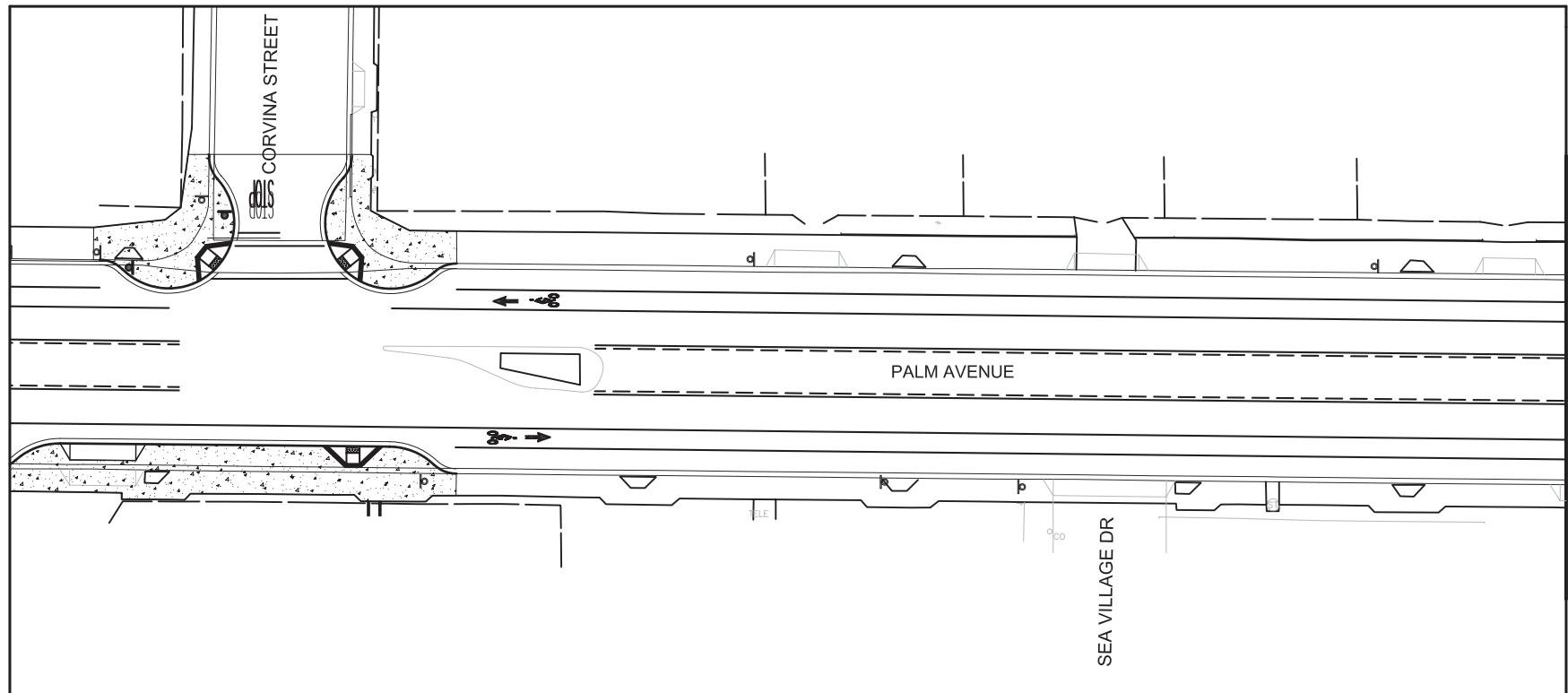


Figure 3-3.3  
Proposed Conceptual Design

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Not To Scale

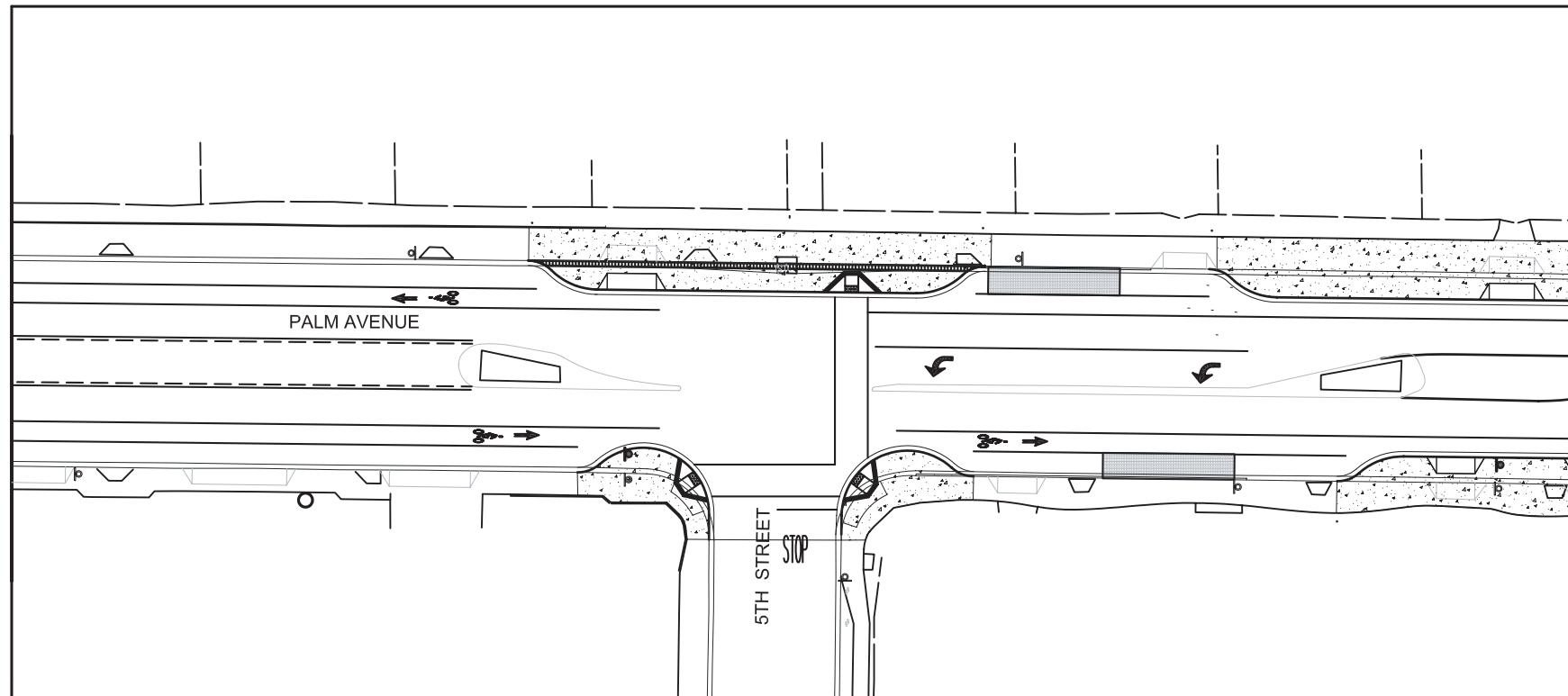


Figure 3-3.4  
Proposed Conceptual Design

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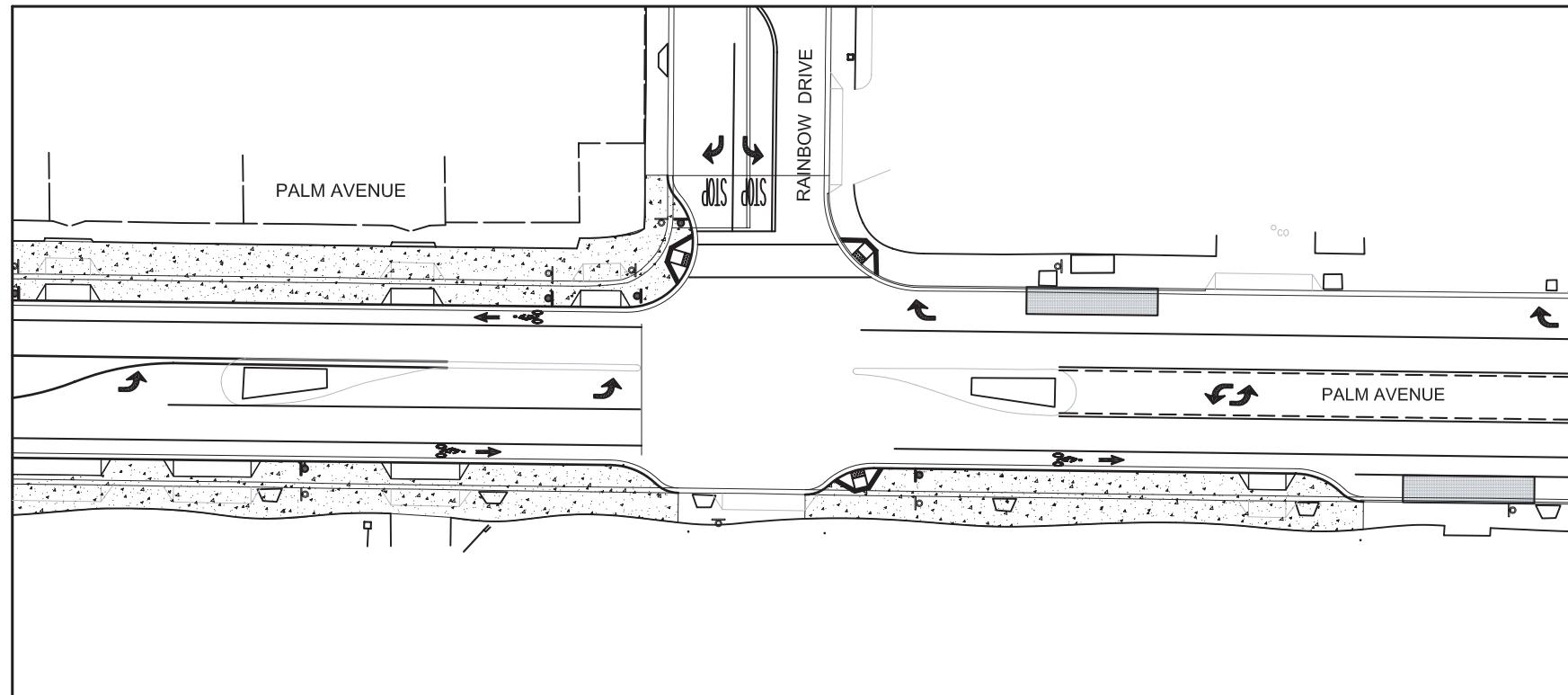


Figure 3-3.5  
Proposed Conceptual Design

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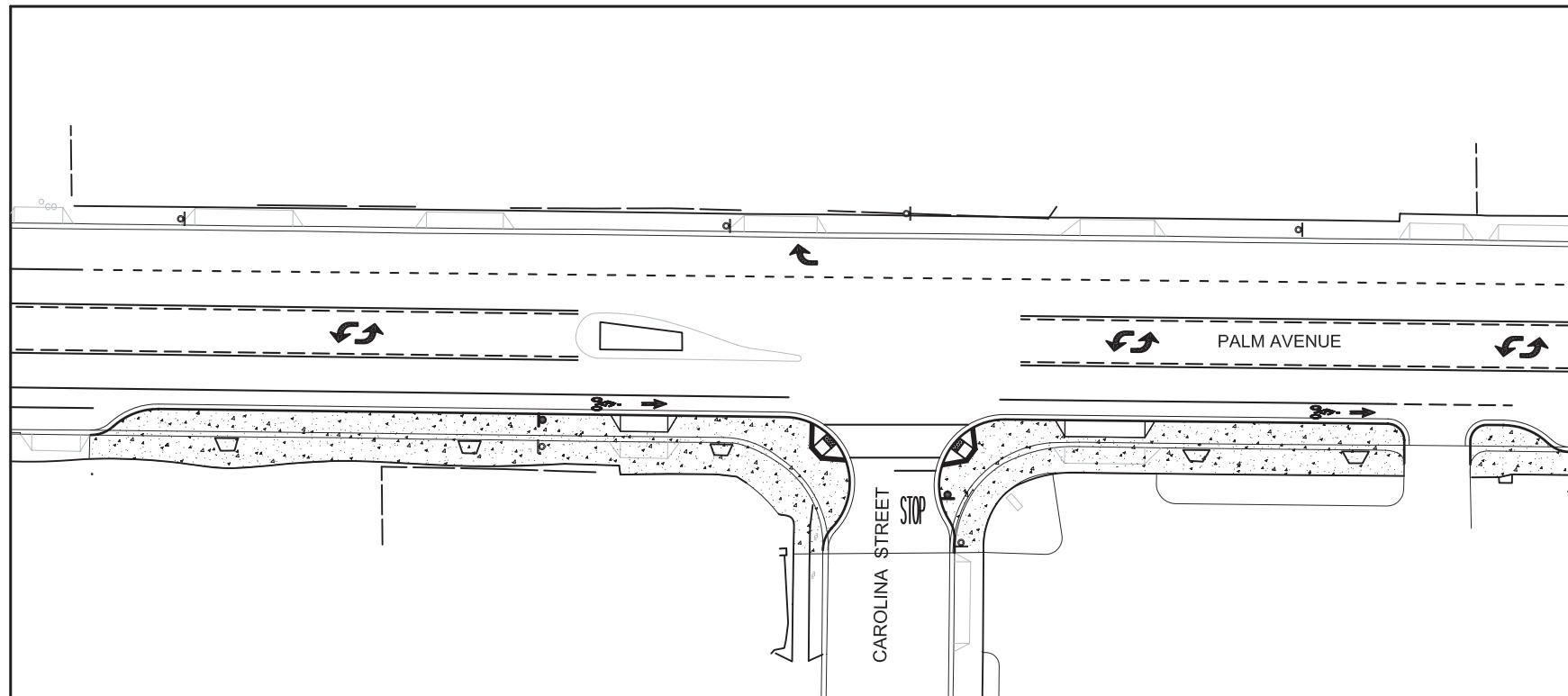


Figure 3-3.6  
Proposed Conceptual Design

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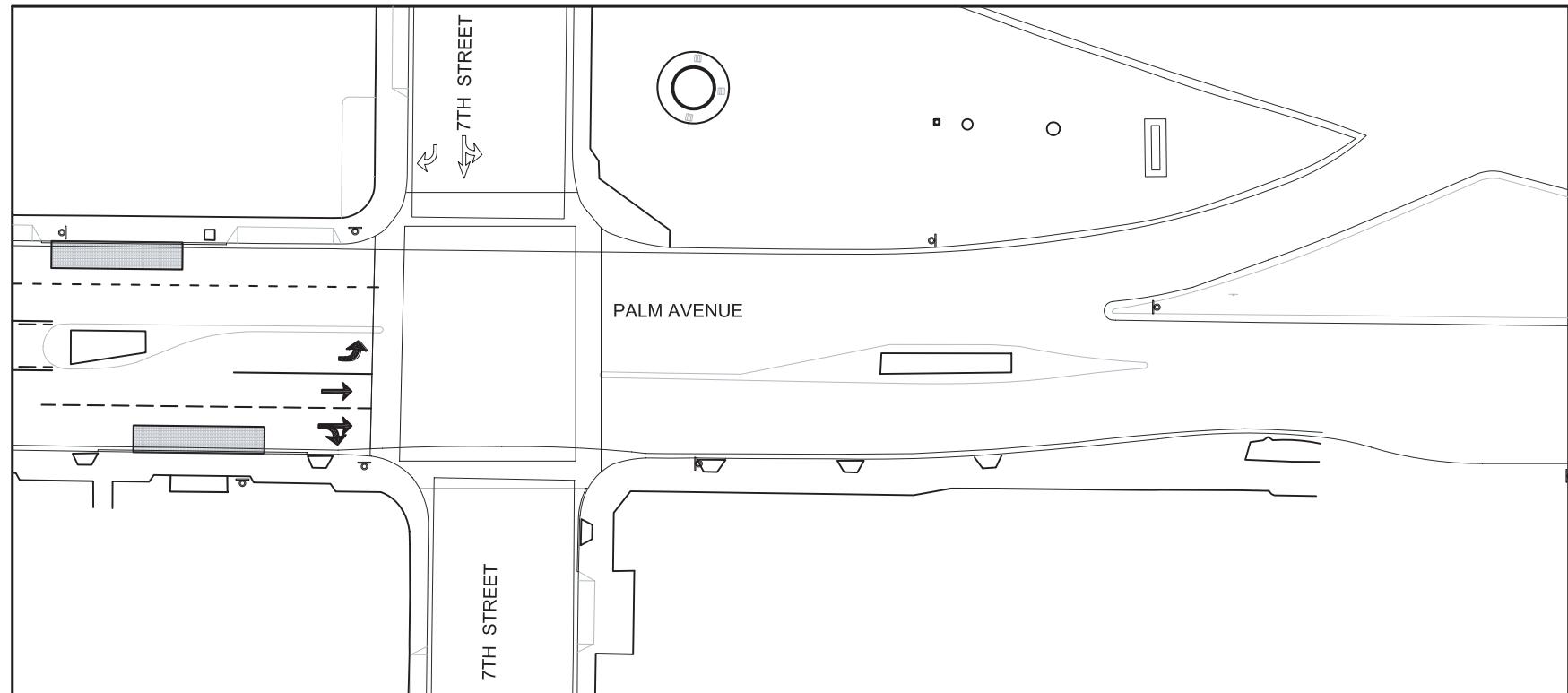


Figure 3-3.7  
Proposed Conceptual Design

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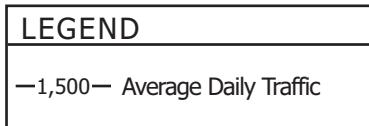
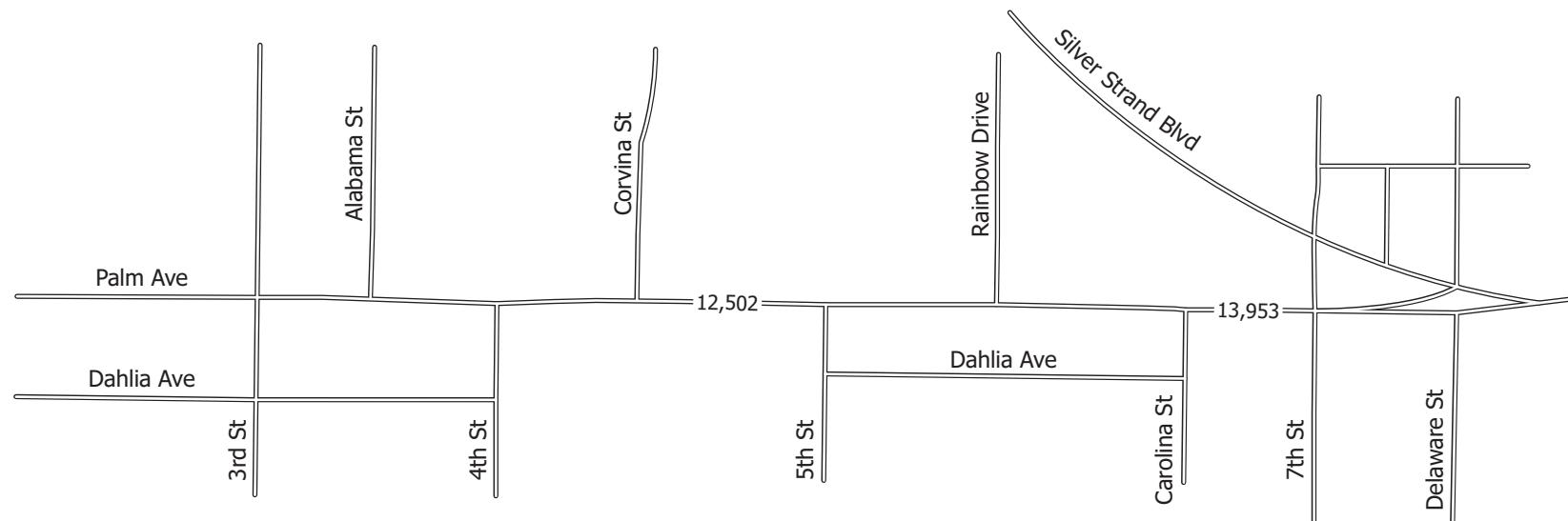


Figure 3-4  
Existing Roadway Segment Volumes

N

Not To Scale

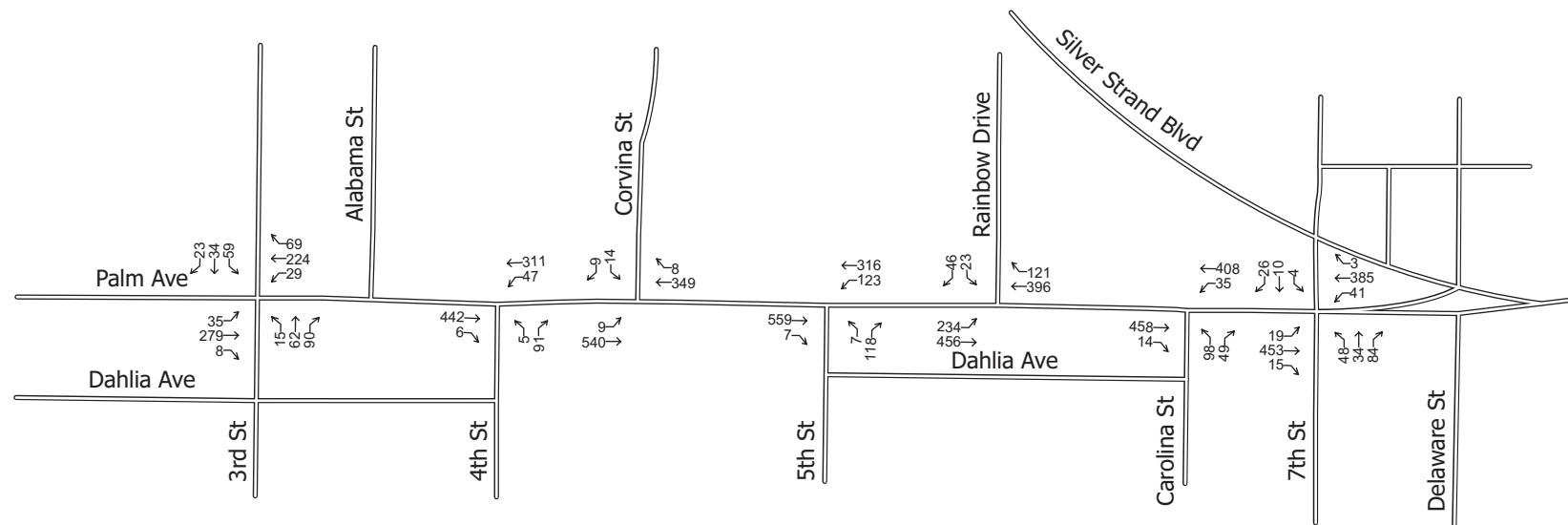


Figure 3-5  
Existing AM Peak Hour Intersection Volumes

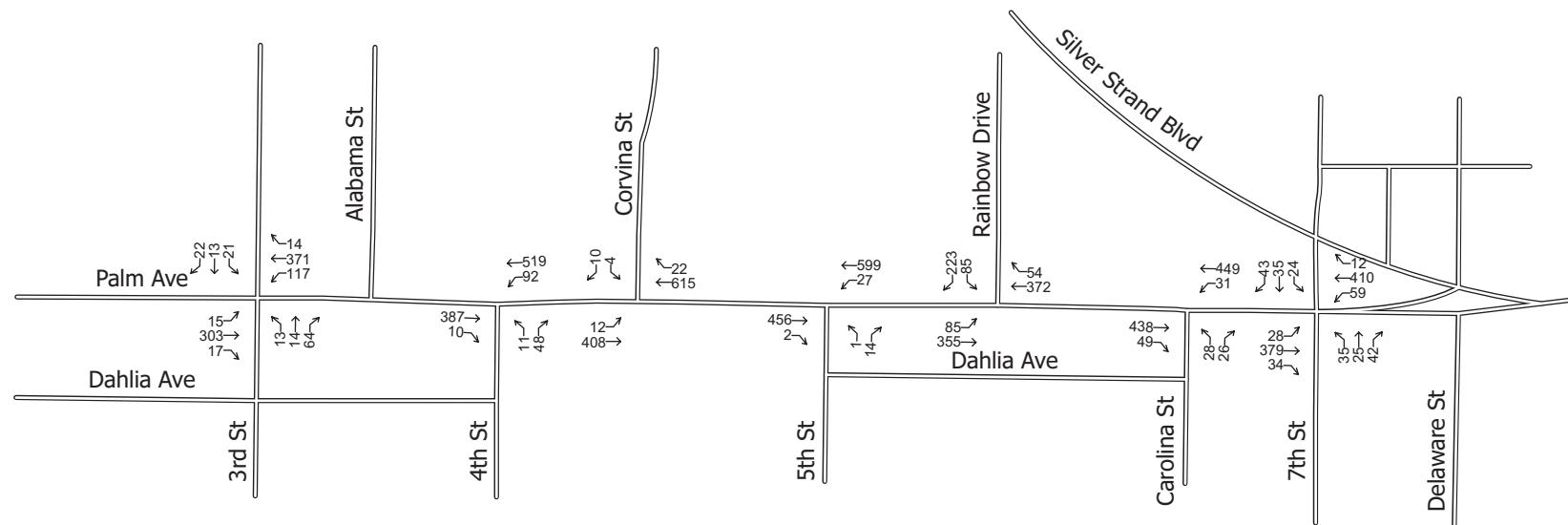


Figure 3-6  
Existing PM Peak Hour Intersection Volumes

N

Not To Scale

## CHAPTER 4

### HORIZON YEAR CONDITIONS

Horizon year conditions represent traffic conditions in 2030. Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

#### **HORIZON YEAR TRAFFIC VOLUMES**

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis a growth rate of 13.0% for *Palm Avenue* based on the SANDAG Series 10 traffic forecast model was applied to existing volumes and specific project traffic from cumulative projects was added to develop horizon year base volumes. The growth factor was calculated by comparing the year 2000 and 2030 SANDAG models and is a conservative estimation for regional growth in the horizon year. The growth shown in the SANDAG model Series 10 accounts for major growth due to new developments or redevelopments along the beach on the west side of *Palm Avenue*. Among the major projects that were accounted for are the neighborhood and street front commercial and multifamily dwellings. The majority of this growth is also contributed from beach trips.

Cumulative projects are planned new developments that will add traffic to the study area roadways. A list of cumulative projects is shown in the table below. Appendix C contains detailed information about volume development.

#### **Cumulative Projects**

Project Name	Description
NAB and NRRF	Future expansion of training facility
2 Single Family Dwelling Units	684-686 Ocean Lane west of <i>Palm Ave.</i>
4 Single Family Dwelling Units	690 Ocean Lane west of <i>Palm Ave.</i>

The training expansion program of the Naval Radio Receiver Facility and the Naval Amphibious Base which is located north of *Palm Avenue* will add to cumulative project traffic as the access to the base from I-5 is through *Palm Avenue*. A conservative approach in determining the trip generation was taken which was added to the existing volume that was grown to develop the future volume.

#### **HORIZON YEAR CIRCULATION NETWORK**

No circulation network changes are assumed for the horizon year.

#### **HORIZON YEAR ANALYSIS**

The effect of the proposed project was compared with the without project scenario for both segments and intersections and are shown in Table 4-1 and 4-2 respectively.

**Table 4-1**  
**Horizon Year Roadway Segment Conditions – SANTEC Method**

Roadway Segment	Horizon Year Without Project				Horizon Year With Project				$\Delta$ V/C	Significant?
	Lanes/Class	ADT	V/C	LOS	Lanes/Class	ADT	V/C	LOS		
<b>Palm Avenue</b>										
3rd Street and Rainbow Street	4/Collector	15,656	0.522	C	2/Collector w/TWLTL	15,656	1.044	F	0.522	Yes
Rainbow Drive to 7th Street	4/Collector	17,441	0.581	C	3/Collector w/TWLTL	17,441	0.997	E	0.415	Yes

**Horizon Year Roadway Segment Conditions – Florida Method**

Roadway Segment	Horizon Year Without Project				Horizon Year With Project				$\Delta$ V/C	Significant ?
	Lanes/Class	Peak Hr Vol	V/C	LOS	Lanes/Class	Peak Hr Vol	V/C	LOS		
<b>AM Peak Hour</b>										
3rd Street and Rainbow Street	FL 4-Divided	1,047	0.34	C	FL 2-Divided	1,047	0.67	D	0.34	No
Rainbow Drive to 7th Street	FL 4-Divided	1,401	0.45	C	FL 2-Divided	1,401	0.90	D	0.45	No
<b>PM Peak Hour</b>										
3rd Street and Rainbow Street	FL 4-Divided	1,186	0.38	C	FL 2-Divided	1,186	0.76	D	0.38	No
Rainbow Drive to 7th Street	FL 4-Divided	1,283	0.41	C	FL 2-Divided	1,283	0.83	D	0.41	No

**Table 4-2**  
**Horizon Year Intersection Conditions**

Intersection	Horizon year Without Project		Horizon year with Project		$\Delta$ Delay	Significant
	Delay	LOS	Delay	LOS		
<b>AM Peak Hour</b>						
Palm Ave. and 3rd St.	15.2	C	18.5	C	3.3	No
Palm Ave. and 4th St.	12.9	B	16.5	C	3.6	No
Palm Ave. and Corvina St.	15.6	C	21.0	C	5.4	No
Palm Ave. and 5th St.	14.9	B	22.1	C	7.2	No
Palm Ave. and Rainbow Dr.	33.1	D	34.9	D	1.8	No
Palm Ave. and Carolina St.	32.4	D	30.5	D	-1.9	No
Palm Ave. and 7th St.	18.3	B	18.3	B	0.0	No
<b>PM Peak Hour</b>						
Palm Ave. and 3rd St.	15.1	C	21.8	C	6.7	No
Palm Ave. and 4th St.	15.3	C	19.9	C	4.6	No
Palm Ave. and Corvina St.	15.7	C	20.6	C	4.9	No
Palm Ave. and 5th St.	11.5	B	14.5	B	3.0	No
Palm Ave. and Rainbow Dr.	43.1	E	25.6	D	-17.5	No
Palm Ave. and Carolina St.	18.6	C	18.7	C	0.1	No
Palm Ave. and 7th St.	17.4	B	17.4	B	0.0	No

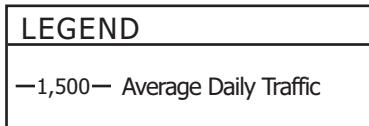
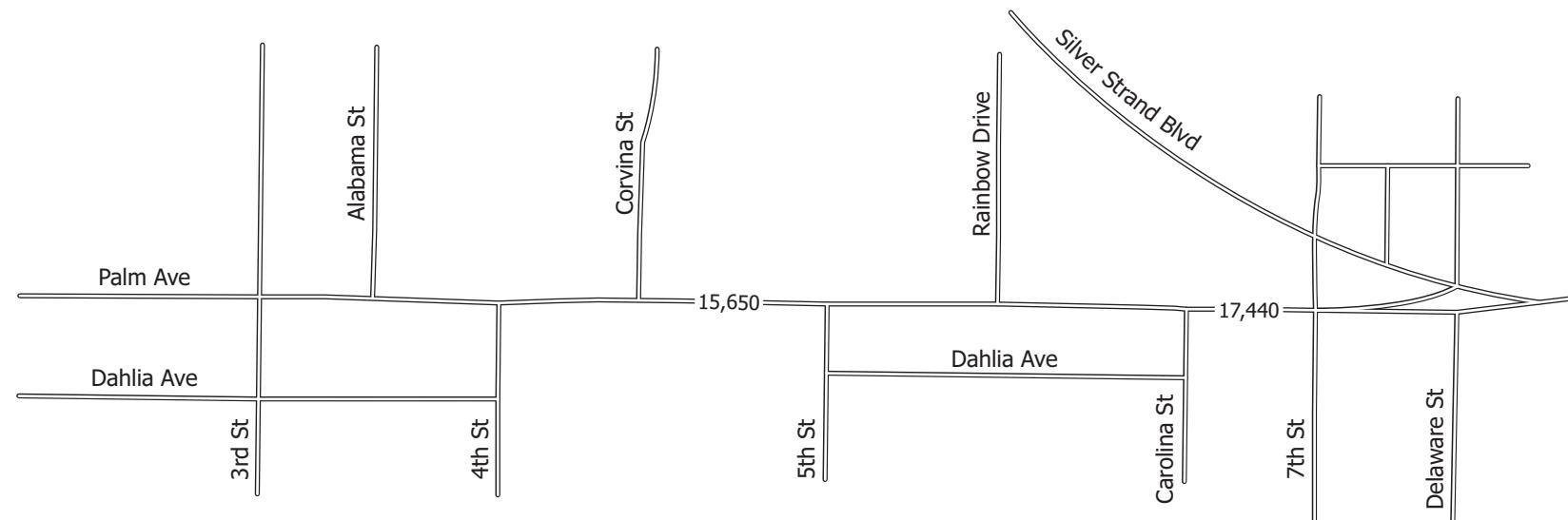
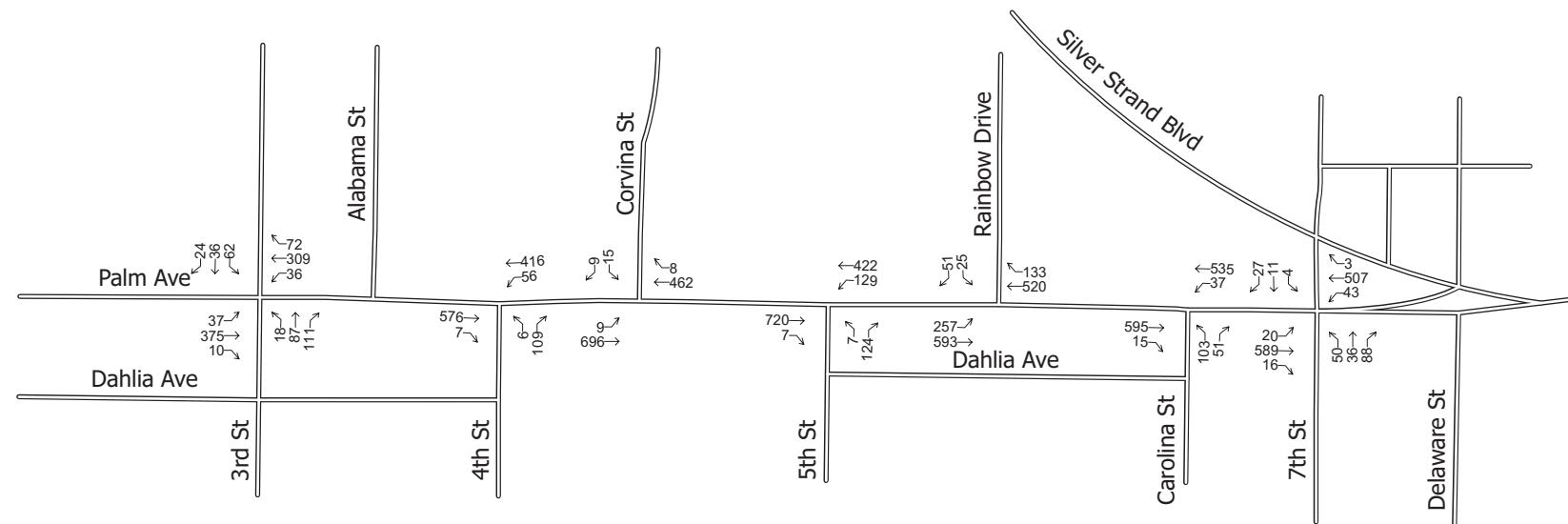


Figure 4-1  
Horizon Year Roadway Segment Volumes

N

Not To Scale

**LEGEND**

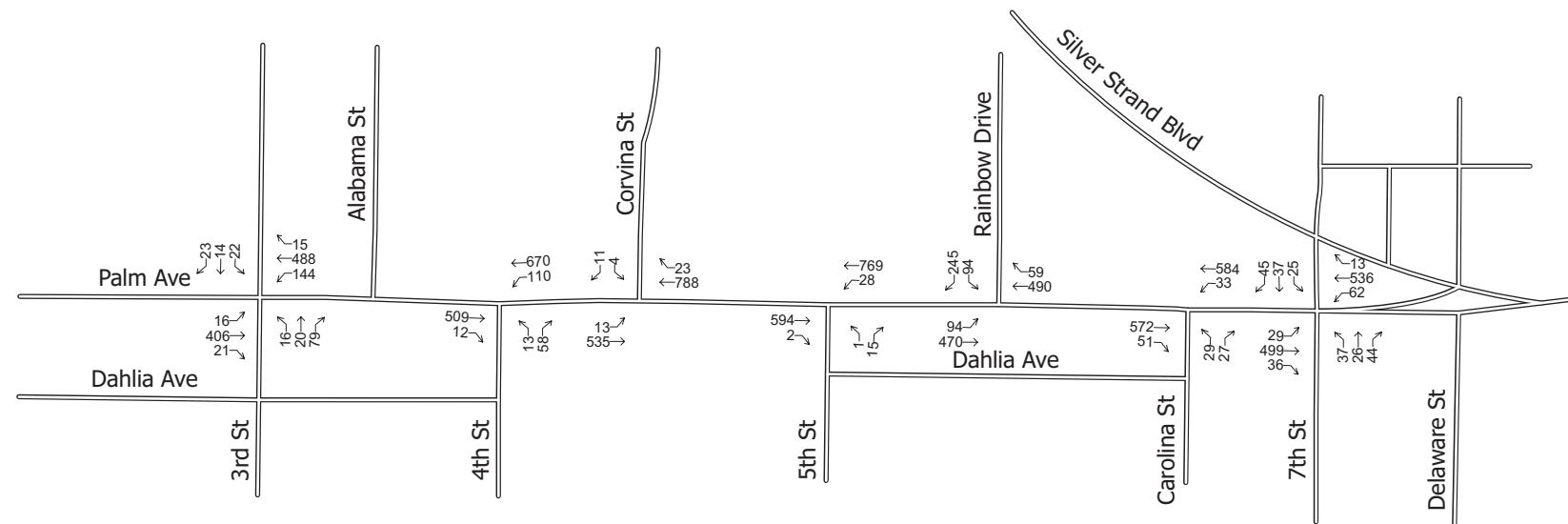
10 ↗ AM Peak Hour Volumes

\*Volumes could be off due to rounding

**Figure 4-2**  
Horizon Year AM Peak Hour Intersection Volumes

N

Not To Scale

**LEGEND**

10 ↗ PM Peak Hour Volumes

\*Volumes could be off due to rounding

**Figure 4-3**  
Horizon Year PM Peak Hour Intersection Volumes

N

Not To Scale

## CHAPTER 5

### TRANSIT AND BICYCLE CIRCULATION

#### **TRANSIT**

The MTS provides bus service in the City of Imperial Beach with *Palm Avenue* as part of the route with four bus stops each on both sides of the street. Bus numbers 933 traveling west bound and 934 traveling east bound on *Palm Avenue* have headway of twelve minutes for both the AM and PM peak hours. The reduction of number of vehicular lanes does not affect the operation of the bus as the bus stop bays and the intersection bulb outs would facilitate their operation without obstructing the through traffic.

The bus stop located just east of *Rainbow Drive* on the northern part of *Palm Avenue* would block the traffic turning right, from the west bound right turn lane on *Palm Avenue* and *Rainbow Drive*. This would cause a back up of traffic on the right turn lane which would in turn block the driveways along *Palm Avenue* located on the northern side on the street. Hence the recommendation is made to merge the bus stops at *Rainbow Drive* and *5<sup>th</sup> Street* which are approximately 480 feet apart, and locate a single bus stop between the two streets. This would facilitate the free flow of west bound right turn traffic at *Palm Avenue* and *Rainbow Drive* and improve the intersection conditions. The *5<sup>th</sup> Street* bus stop which is approximately 790 feet from the *Corvina Street* bus stop and the *Rainbow Drive* bus stop which is approximately 650 feet from the *7<sup>th</sup> Street* bus stop will be merged and located at a place which is approximately 1020 feet from *Corvina Street* bus stop and 910 feet from the *7<sup>th</sup> street* bus stop. The new bus stop location can be placed approximately at a distance of 230 feet and 270 feet from the existing *5<sup>th</sup> Street* and *Rainbow Drive* bus stops respectively. The new bus stop would contribute to 75% and 25% of the passengers alighting and 70% and 30% of the passengers boarding at *Rainbow Drive* and *5<sup>th</sup> Street* bus stops respectively.

#### **BICYCLE CIRCULATION**

The Imperial Beach Bicycle Transportation Plan (BTP) is a part of the city's General Plan, designed to illustrate the existing bike routes and facilities as well as lay out future bicycle transportation elements. The BTP, which covers the entire city's street and bicycle path network, utilizes Class I, II and III type bike routes. Class I routes are separated bicycle paths set apart from vehicular traffic. Class II bike routes are designated bike lanes within a roadway, traveling adjacent to the vehicular traffic, and Class III routes share vehicular travel lanes with the automotive traffic. The bicycle routes and bicycle traffic do not have a measurable effect to the traffic analysis done for the EIR. For this reason, bike routes are considered to have no measurable impact and are do not have needs for mitigation for their designation or creation. However, this study specifically addresses the reduction of vehicular travel lanes to accommodate proposed bike lanes along *Palm Avenue* from *3<sup>rd</sup> Street* to *7<sup>th</sup> Street*. The current BTP is shown in Figure 5-1.

#### **PEDESTRIAN CIRCULATION**

The proposed geometric design of the curb on *Palm Avenue*, which include bulb out and curb extensions at intersections between *3<sup>rd</sup> Street* and *Carolina Street*, would reduce the walking distance and the time that the pedestrians are in the street while crossing at the intersections. The design would also improve the ability of the pedestrians, bicyclists and motorists to see each other and would encourage the motorists to travel at a slow speed and hence improving the safety of the pedestrians. The proposed design reduces an approximate 10 feet to 20 feet of pedestrian travel distance between the existing ramps and involves

installation of pedestrian ramps on north-south direction on some of the intersections, which would facilitate the pedestrians crossing *Palm Avenue*.

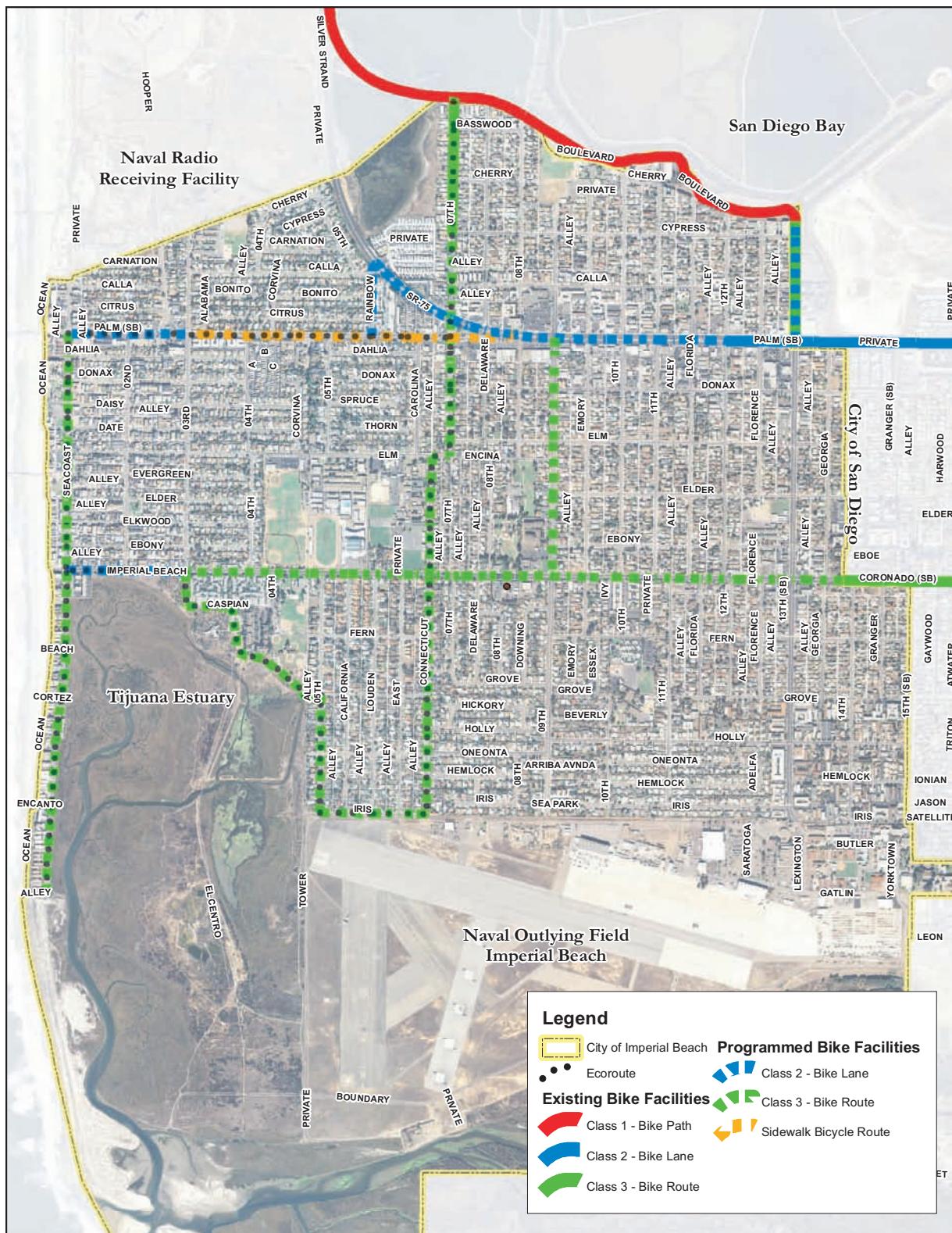


Figure 5-1  
Bike Transportation Plan

N

Not To Scale

## CHAPTER 6

### IMPACTS AND MITIGATION

This chapter identifies significant impacts, project mitigation. These impacts are shown in Table 6-1

#### **CONSTRUCTION IMPACTS**

The construction of the project would cause inconvenience for both the vehicular and pedestrian traffic as it requires closure of travel lanes and sidewalks, resulting in detours. The construction of the median between *5<sup>th</sup> Street* and *Rainbow Drive*, which is to be the first task of the project, would involve the closure of the inner lane on both directions. The two way left turn lane would also be closed and the left turning traffic between the two streets would be rerouted. During the construction of the curb extensions the outer lanes on both sides of the street would be closed, similar to the ultimate condition of the proposed design. The impacts on the intersections and segments would be similar to the with project scenario as analyzed in this report. Sidewalks are closed one side at a time so that the pedestrians can be rerouted to use the sidewalk on the other side of the street. Although not anticipated, some parts of *Palm Avenue* and some side streets may be closed rerouting the traffic on other streets. This may cause the addition of traffic on other intersections and segments dropping the level of service from the existing conditions. As the sidewalk is closed, temporary removal of bus stops may cause the passengers to use other bus stops.

#### **SIGNIFICANT IMPACTS**

As seen from the above tables, the intersections and segments are not impacted for both the AM and PM peak hour conditions for the with project scenario for both the existing and horizon year time periods. Although the daily segment analysis analyzed with SANTEC method shows a significant impact for the with project scenario for the horizon years, the Florida method shows that the segment operates better during AM and PM peak hours at which time the traffic is high and are considered to be the worst case time periods. During the off peak as the traffic volumes are low the segment operates much better than it does during the peak periods.

Table 6-1 shows segments on *Palm Avenue* significantly impacted directly by the proposed project analyzed with the SANTEC method, based on the significance criteria presented in Appendix A:

**Table 6-1**  
**Impacts & Mitigation**

Location	Type Of Impact	Mitigation
Palm Avenue: 3rd Street to Rainbow Street	Cumulative	Mitigation has not been identified for this location. A more detailed analysis (Florida Method), which analyzes the segment during the peak hours where traffic volumes are the highest, shows that the segment operates a good level of service.
Palm Avenue: Rainbow Drive to 7th Street	Direct	Mitigation has not been identified for this location. A more detailed analysis (Florida Method), which analyzes the segment during the peak hours where traffic volumes are the highest, shows that the segment operates a good level of service.

## OTHER IMPROVEMENTS

*Palm Avenue* and *Rainbow Drive* was analyzed as signalized intersection and a comparison was made between the two way stop control and signalized intersection in Table 6-2. As shown from the table, there is a significant improvement in the intersection condition with the intersection operating at a level of service B for both the AM and PM peak hour conditions. Also the signalization of the intersection reduces the delay of the south bound vehicles which is high when it is controlled by a stop control.

The signal warrants; Warrant 1, Condition B-Interruption of Continuous Traffic for 80% condition and Warrant 2 – Four Hour Vehicular Volume are satisfied hence requiring the intersection to be signalized. The Traffic Signal Warrants Worksheets are shown in Appendix F.

**Table 6-2**  
**Other Improvements**

Intersection	2 Way Stop		Signal		$\Delta$ Delay
	Delay	LOS	Delay	LOS	
<b>AM Peak Hour</b>					
Palm Ave. and Rainbow Dr.	34.9	D	13.6	B	-21.3
<b>PM Peak Hour</b>					
Palm Ave. and Rainbow Dr.	25.6	D	17.5	B	-8.1

## CHAPTER 7

### SUMMARY OF ANALYSIS

This chapter summarizes the operations at the study intersections and segments. Table 7-1 shows the summary of roadway segment conditions for each scenario. Table 7-2 shows the summary of intersection conditions for each scenario.

As shown in the intersection tables below, for both the Existing and Horizon Years the reduction in the number of vehicular lanes from four to two does not have any significant impacts on the intersections for both the AM and PM peak hours. However, the roadway segments fail for the “With Project” scenario in the Horizon Year when analyzed with the SANTEC Method, whereas it works at a level of service of D or better when analyzed with the Florida Method. The Florida Method analyzes segment conditions during the AM and PM peak periods, which are the worst case scenarios when traffic volumes are higher than during other time periods. Therefore, if the roadway segments are not significantly impacted even during the worst case scenario, the roadway segments should function properly despite the reduction in the number of vehicular lanes.

**Table 7-1**  
**Summary of Roadway Segment Conditions – SANTEC Method**

Roadway Segment	Existing						Horizon Year					
	Without Project		With Project		$\Delta$ V/C	Significant?	Without Project		With Project		$\Delta$ V/C	Significant?
	V/C	LOS	V/C	LOS			V/C	LOS	V/C	LOS		
<b>Palm Avenue</b>												
3rd Street to Rainbow Street	0.42	B	0.83	D	0.42	No	0.52	C	1.04	F	0.52	Yes
Rainbow Drive to 7th Street	0.47	B	0.80	D	0.33	No	0.58	C	1.00	E	0.42	Yes

**Summary of Roadway Segment Conditions – Florida Method**

Roadway Segment	Existing						Horizon Year					
	Without Project		With Project		$\Delta$ V/C	Significant?	Without Project		With Project		$\Delta$ V/C	Significant?
	V/C	LOS	V/C	LOS			V/C	LOS	V/C	LOS		
<b>AM Peak Hour</b>												
3rd Street to Rainbow Street	0.26	C	0.51	C	0.26	No	0.34	C	0.67	D	0.34	No
Rainbow Drive to 7th Street	0.35	C	0.60	D	0.25	No	0.45	C	0.90	D	0.45	No
<b>PM Peak Hour</b>												
3rd Street to Rainbow Street	0.29	C	0.59	C	0.29	No	0.38	C	0.76	D	0.38	No
Rainbow Drive to 7th Street	0.32	C	0.55	C	0.23	No	0.41	C	0.83	D	0.41	No

**Table 7-2**  
**Summary of Intersection Conditions**

Intersection	Existing					Horizon Year				
	W/O Project		With Project			W/O Project		With Project		
	Delay	LOS	Delay	LOS	Sig?	Delay	LOS	Delay	LOS	Sig?
<b>AM Peak Hour</b>										
Palm Ave. and 3rd St.	11.2	B	12.3	B	No	15.2	C	18.5	C	No
Palm Ave. and 4th St.	11.5	B	13.3	B	No	12.9	B	16.5	C	No
Palm Ave. and Corvina St.	13.1	B	15.9	C	No	15.6	C	21.0	C	No
Palm Ave. and 5th St.	12.8	B	16.4	C	No	14.9	B	22.1	C	No
Palm Ave. and Rainbow Dr.	21.1	C	21.3	C	No	33.1	D	34.9	D	No
Palm Ave. and Carolina St.	20.5	C	20.0	C	No	32.4	D	30.5	D	No
Palm Ave. and 7th St.	18.9	B	18.9	B	No	18.3	B	18.3	B	No
<b>PM Peak Hour</b>										
Palm Ave. and 3rd St.	11.1	B	13.2	B	No	15.1	C	21.8	C	No
Palm Ave. and 4th St.	12.7	B	14.8	B	No	15.3	C	19.9	C	No
Palm Ave. and Corvina St.	13.2	B	15.9	C	No	15.7	C	20.6	C	No
Palm Ave. and 5th St.	10.6	B	12.4	B	No	11.5	B	14.5	B	No
Palm Ave. and Rainbow Dr.	22.0	C	17.2	C	No	43.1	E	25.6	D	No
Palm Ave. and Carolina St.	14.8	B	15.0	B	No	18.6	C	18.7	C	No
Palm Ave. and 7th St.	18.1	B	18.1	B	No	17.4	B	17.4	B	No

The proposed design improves the pedestrian circulation network as it reduces the travel distance when crossing at intersections, and improves the safety of the pedestrians.

Due to interests expressed by the public, KOA also evaluated traffic volumes to determine if a new traffic signal at the intersection of *Palm Avenue* and *Rainbow Drive* would be warranted. After completing the traffic signal warrants, it was determined that Warrant #2: Four-hour vehicle volume, as detailed in the Manual on Traffic Control Devices (MUTCD), was satisfied. This means that a traffic signal does meet the minimum criteria to be installed if the City of Imperial Beach elects to do so. The MUTCD intends to restrict the installation of unnecessary traffic signals, but does not mandate that they be installed if the warrants are met. It should be noted that the intersection operates well as either a signal or as the existing side-street stop.

The proposed condition for the unsignalized *Palm Avenue* and *Rainbow Drive* intersection in this analysis changes the lane use of *Rainbow Drive* from one southbound lane into one dedicated left turn lane and one dedicated right turn lane. The signalized scenario would also include the striping adjustment of the lane uses as proposed in the unsignalized alternative. Table 7-3 shows the comparison of the delay and level of service for the two-way stop and signal controlled intersection at *Palm Avenue* and *Rainbow Drive*. The results indicate that a traffic signal is not needed for the corridor to operate in acceptable levels of service. Although the addition of the traffic signal will help reduce delay at this intersection, it is not required as any sort of project mitigation.

By removing the bus stops at *Rainbow Drive* and *5<sup>th</sup> Street* and merging the stops in both the westbound and eastbound directions into one new stop between these two streets, queuing would be reduced for the west bound right turning traffic on *Rainbow Drive*. MTS has been presented with this suggestion and will internally make a decision regarding the potential relocation of these bus stops.

**Table 7-3**  
**Other Improvements**

Intersection	2 Way Stop		Signal		Delay
	Delay	LOS	Delay	LOS	
<b>AM Peak Hour</b>					
Palm Ave. and Rainbow Dr.	34.9	D	13.6	B	-21.3
<b>PM Peak Hour</b>					
Palm Ave. and Rainbow Dr.	25.6	D	17.5	B	-8.1

## CHAPTER 8 RECOMMENDATIONS

KOA Corporation recommends the project be constructed as proposed with the following improvements:

- Remove and merge the bus stops on *Rainbow Avenue* and *5<sup>th</sup> Avenue* on the northern side of *Palm Avenue* and locate it between the two streets.
- Signalization of *Palm Avenue* and *Rainbow Drive* intersection is a feasible option should the City of Imperial Beach elect to do so. It should be noted that the intersection operates well as either a signal or as the existing side-street stop.

Sincerely,  
**Katz, Okitsu & Associates**



J. Arnold Torma, P.E.  
Principal Engineer

Prepared By:

## **APPENDIX A**

### **LEVEL OF SERVICE CONCEPTS, ANALYSIS METHODOLOGIES, STANDARDS OF SIGNIFICANCE**

### Roadway Segment Level of Service Definitions

<b>LOS</b>	<b>V/C</b>	<b>Congestion/Delay</b>	<b>Traffic Description</b>
(Used for surface streets, freeways, expressways and conventional highways)			
"A"	<0.41	None	Free flow.
"B"	>0.41-0.62	None	Free to stable flow, light to moderate volumes.
"C"	>0.62-0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	>0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	>0.92-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
(Used for surface streets and conventional highways)			
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
(Used for freeways and expressways)			
"F(0)"	>1.00-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F(1)"	>1.25-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
"F(2)"	>1.35-1.45	Very Severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F(3)"	>1.45	Extremely Severe 3+ hours of delay	Gridlock

Source: Caltrans, 1992.

### LEVEL OF SERVICE (LOS) DEFINITIONS

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. Levels of service for freeway segments can generally be categorized as shown in the table above.

**City of San Diego**  
**Roadway Capacity Standards**

Street Classification	Lanes	Cross Sections* (Approx.)	Level of Service ADT**				
			A	B	C	D	E
Expressway	6 lanes	102-160/122-200	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6 lanes	102-108/122-128	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 lanes	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 lanes	78-82/98-102	15,000	21,000	30,000	35,000	40,000
Secondary Arterial/ Collector	4 lanes	64-72/84-92	10,000	14,000	20,000	25,000	30,000
Collector (no center lane) (continuous left- turn lane)	4 lanes 2 lanes	64/84 50/70	5,000	7,000	10,000	13,000	15,000
Collector (no fronting property)	2 lanes	40/60	4,000	5,500	7,500	9,000	10,000
Collector (commercial- industrial fronting)	2 lanes	50/70	2,500	3,500	5,000	6,500	8,000
Collector (multi-family)	2 lanes	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2 lanes	36/56	---	---	2,200	---	---

Legend:

\*Curb to curb width (feet)/right of way width (feet): based upon the City of San Diego Street Design Manual and other jurisdictions within the San Diego region.

\*\*Approximate recommended ADT based upon the City of San Diego Street Design Manual.

Notes:

The volumes and the average daily level of service listed above are only intended as a general planning guideline.

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

**Signalized Intersection Level of Service**  
**Highway Capacity Manual Operational Analysis Method**

The operational analysis method for evaluation of signalized intersections presented in the *2000 Highway Capacity Manual* (Transportation Research Board Special Report 209) defines level of service in terms of delay, or more specifically, control stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time.

Control Stopped Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
<10	LOS A describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
>10 – 20	LOS B describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
>20 – 35	LOS C describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
>35 – 55	LOS D describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
>55 – 80	LOS E is considered to be the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80	LOS F describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Highway Capacity Manual 2000, Exhibit 16-2

**Minor Street Stop and All-Way Stop Controlled Intersection Level of Service**  
**Highway Capacity Manual Operational Analysis Method**

The Highway Capacity Manual (HCM) analysis method for evaluating minor street stop intersections is based on the average total delay for each impeded movement. For all-way stop controlled intersections it is based on the average total delay for the entire intersection. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The resulting delay is used to determine the level of service as shown in the following table.

Average Total Delay	Level of Service (LOS) Characteristics
0-10	LOS A – Little or no delay
>10 – 15	LOS B – Short traffic delay
>15 – 25	LOS C – Average traffic delay
>25 – 35	LOS D – Long traffic delays
>35 – 50	LOS E – Very long traffic delays
>50	LOS F – When the demand exceeds the capacity of the lane, extreme delays will be encountered and queuing may cause severe congestion to the intersection.

Source: Highway Capacity Manual 2000, Exhibit 17-22

**City of San Diego**  
**Measure of Significant Project Traffic Impacts**

Level of Service with Project*	Allowable Change due to Project Impact**					
	Freeways		Roadway Sections		Intersections	Ramps***
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E, & F	0.01	1	0.02	1	2	2

Notes:

\* All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or an equivalent LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped locations). For metered freeway ramps, project traffic impacts are generally acceptable if they do not cause any traffic queues to exceed ramp storage capacities.

\*\* If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. These impact changes may be measured from acceptable computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigation within the Traffic Impact Study [TIS] report that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project is "E" or "F," the project applicant shall be responsible for mitigating significant impact changes.

\*\*\*See Attachment B for ramp metering analysis.

Key:  
V/C = Volume to Capacity ratio  
Speed = Speed measured in miles per hour  
Delay = Average stopped delay per vehicle measured in seconds, or minutes  
LOS = Level of Service

**APPENDIX B**

**TRAFFIC COUNT DATA**

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.11.3RD ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 1

## Groups Printed- Vehicles

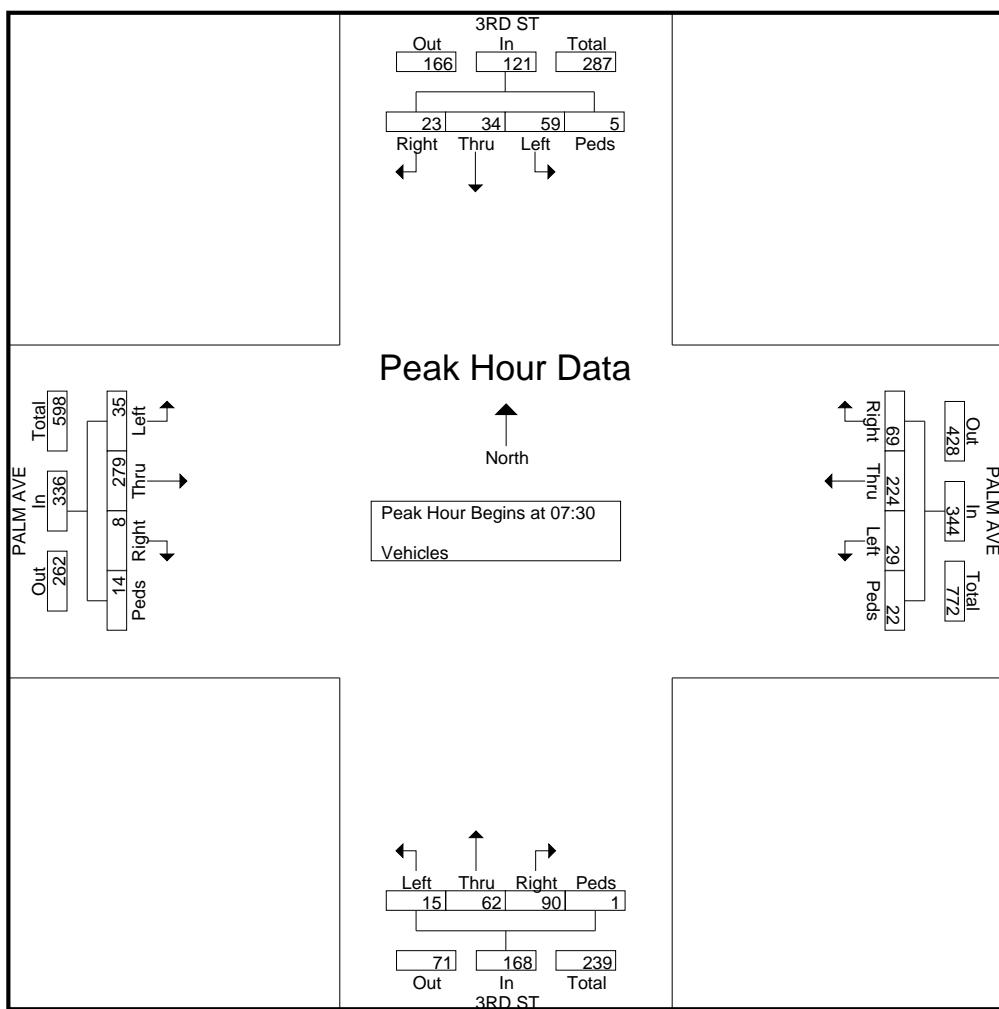
	3RD ST Southbound				PALM AVE Westbound				3RD ST Northbound				PALM AVE Eastbound				Int. Total	
	Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00		3	2	0	0	6	36	3	1	0	1	34	0	2	64	1	0	153
07:15		4	1	3	0	0	68	6	8	1	1	31	3	3	86	0	4	219
07:30		7	4	4	1	4	65	9	8	3	6	29	0	2	68	2	4	216
07:45		12	6	5	1	6	57	11	1	4	11	24	0	6	90	3	4	241
Total		26	13	12	2	16	226	29	18	8	19	118	3	13	308	6	12	829
08:00		14	7	8	2	11	51	26	6	3	23	20	0	11	62	3	3	250
08:15		26	17	6	1	8	51	23	7	5	22	17	1	16	59	0	3	262
08:30		22	7	4	4	10	60	9	2	4	6	20	3	3	60	1	1	216
08:45		4	1	3	2	16	60	5	7	4	1	20	2	3	78	5	0	211
Total		66	32	21	9	45	222	63	22	16	52	77	6	33	259	9	7	939
<b>***BREAK***</b>																		
16:00		2	7	4	2	24	96	4	3	5	6	13	2	0	72	0	3	243
16:15		3	5	7	4	29	98	3	7	5	3	19	5	1	76	7	4	276
16:30		7	4	3	2	30	99	3	4	2	4	10	0	4	91	2	3	268
16:45		3	0	7	0	22	91	6	2	5	2	17	7	4	67	4	21	258
Total		15	16	21	8	105	384	16	16	17	15	59	14	9	306	13	31	1045
17:00		8	4	5	0	36	83	2	3	1	5	18	1	6	69	4	0	245
17:15		4	5	1	1	19	122	5	4	0	2	9	0	4	67	2	1	246
17:30		7	4	7	3	23	99	9	4	6	4	16	1	3	87	3	0	276
17:45		16	6	4	2	29	105	2	2	3	2	21	1	1	67	2	0	263
Total		35	19	17	6	107	409	18	13	10	13	64	3	14	290	11	1	1030
Grand Total		142	80	71	25	273	1241	126	69	51	99	318	26	69	1163	39	51	3843
Apprch %		44.7	25.2	22.3	7.9	16	72.6	7.4	4	10.3	20	64.4	5.3	5.2	88	3	3.9	
Total %		3.7	2.1	1.8	0.7	7.1	32.3	3.3	1.8	1.3	2.6	8.3	0.7	1.8	30.3	1	1.3	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.11.3RD ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 2

	3RD ST Southbound					PALM AVE Westbound					3RD ST Northbound					PALM AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	7	4	4	1	16	4	65	9	8	86	3	6	29	0	38	2	68	2	4	76	216
07:45	12	6	5	1	24	6	57	11	1	75	4	11	24	0	39	6	90	3	4	103	241
08:00	14	7	8	2	31	11	51	26	6	94	3	23	20	0	46	11	62	3	3	79	250
08:15	26	17	6	1	50	8	51	23	7	89	5	22	17	1	45	16	59	0	3	78	262
Total Volume	59	34	23	5	121	29	224	69	22	344	15	62	90	1	168	35	279	8	14	336	969
% App. Total	48.8	28.1	19	4.1		8.4	65.1	20.1	6.4		8.9	36.9	53.6	0.6		10.4	83	2.4	4.2		
PHF	.567	.500	.719	.625	.605	.659	.862	.663	.688	.915	.750	.674	.776	.250	.913	.547	.775	.667	.875	.816	.925

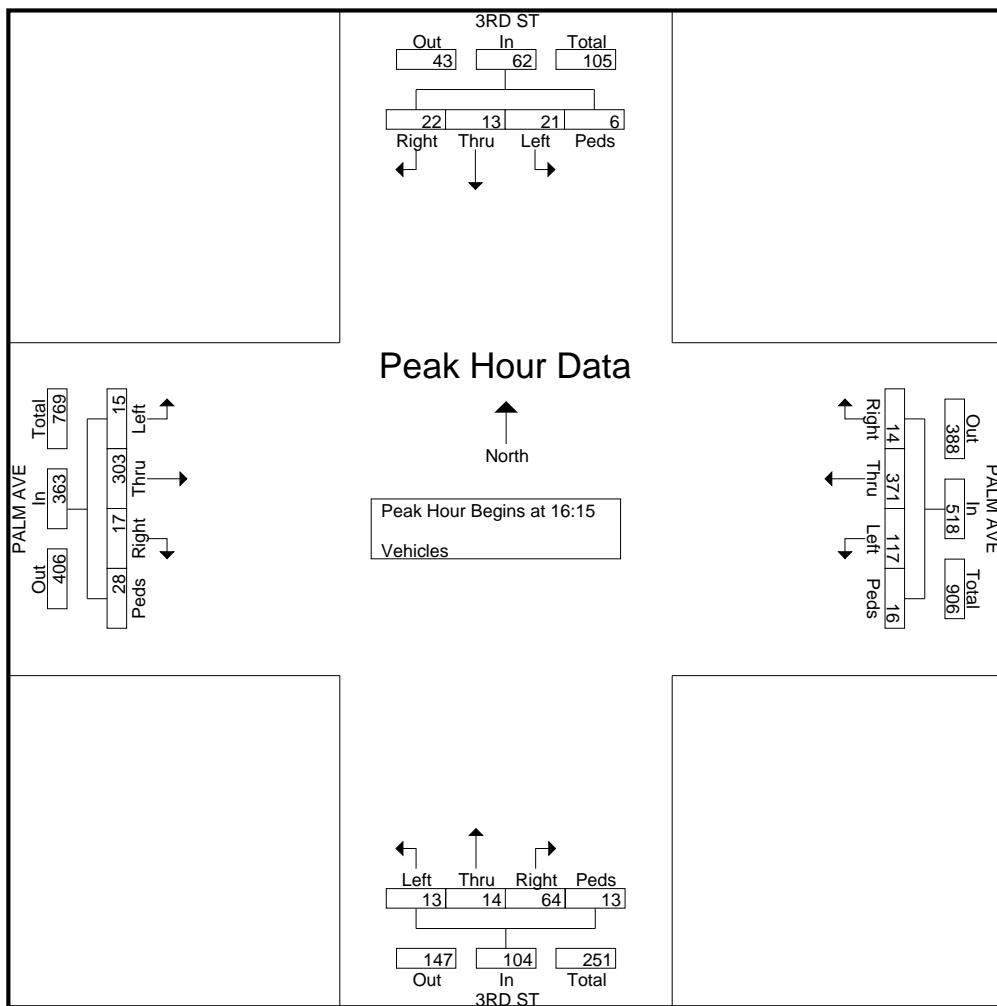


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.11.3RD ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 3

	3RD ST Southbound					PALM AVE Westbound					3RD ST Northbound					PALM AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	3	5	7	4	19	29	98	3	7	137	5	3	19	5	32	1	76	7	4	88	276
16:30	7	4	3	2	16	30	99	3	4	136	2	4	10	0	16	4	91	2	3	100	268
16:45	3	0	7	0	10	22	91	6	2	121	5	2	17	7	31	4	67	4	21	96	258
17:00	8	4	5	0	17	36	83	2	3	124	1	5	18	1	25	6	69	4	0	79	245
Total Volume	21	13	22	6	62	117	371	14	16	518	13	14	64	13	104	15	303	17	28	363	1047
% App. Total	33.9	21	35.5	9.7		22.6	71.6	2.7	3.1		12.5	13.5	61.5	12.5		4.1	83.5	4.7	7.7		
PHF	.656	.650	.786	.375	.816	.813	.937	.583	.571	.945	.650	.700	.842	.464	.813	.625	.832	.607	.333	.908	.948



# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.10.4TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 1

## Groups Printed- Vehicles

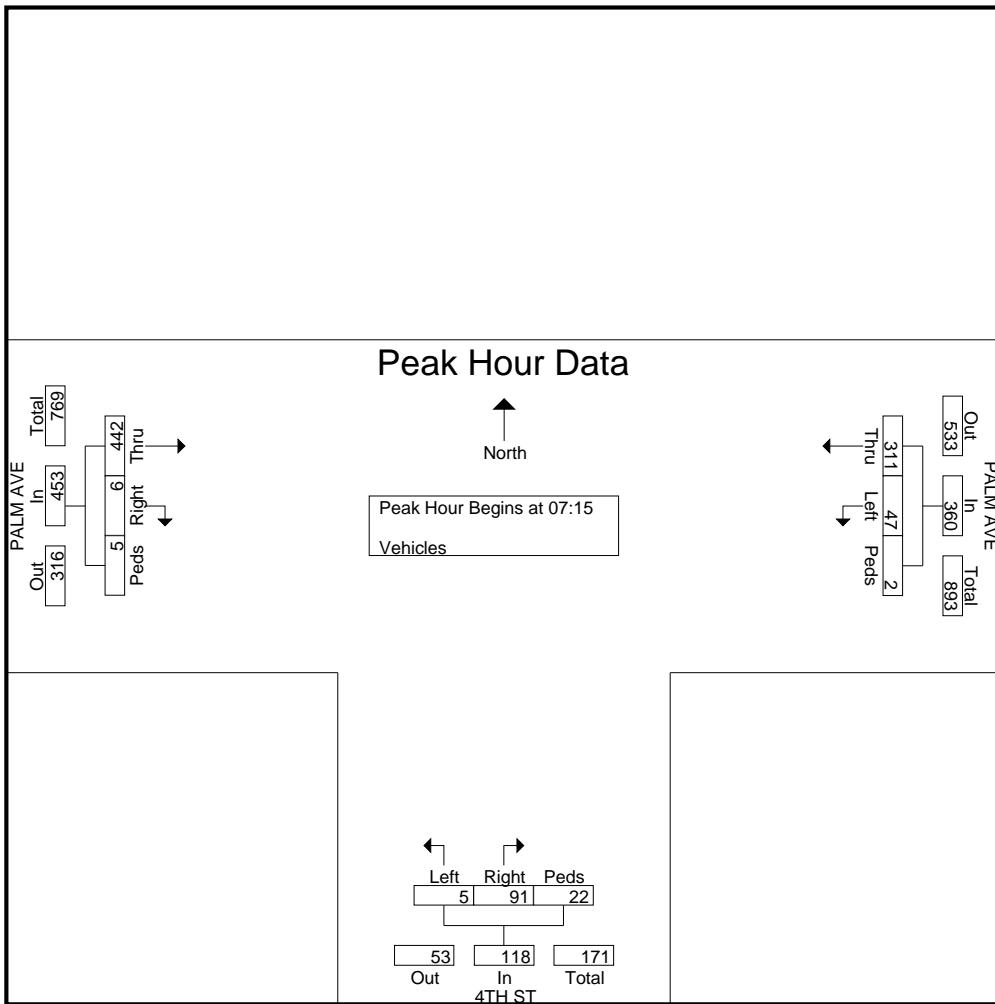
PALM AVE Westbound				4TH ST Northbound			PALM AVE Eastbound			
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Int. Total
07:00	12	49	0	0	21	3	110	0	1	196
07:15	24	79	1	1	27	7	120	4	0	263
07:30	10	67	1	2	23	4	105	0	0	212
07:45	6	77	0	0	20	8	120	1	4	236
Total	52	272	2	3	91	22	455	5	5	907
08:00	7	88	0	2	21	3	97	1	1	220
08:15	7	87	0	5	17	0	117	2	0	235
08:30	6	69	0	2	12	5	102	0	0	196
08:45	9	83	0	0	22	4	105	1	0	224
Total	29	327	0	9	72	12	421	4	1	875
<b>***BREAK***</b>										
16:00	11	129	0	0	10	9	86	1	0	246
16:15	23	132	1	1	12	8	108	2	0	287
16:30	28	135	0	4	16	8	104	3	2	300
16:45	16	124	0	2	9	13	87	2	1	254
Total	78	520	1	7	47	38	385	8	3	1087
17:00	25	128	0	4	11	5	88	3	1	265
17:15	20	144	0	1	11	4	85	3	0	268
17:30	27	135	0	0	12	4	103	0	0	281
17:45	20	135	0	2	11	2	105	2	0	277
Total	92	542	0	7	45	15	381	8	1	1091
Grand Total	251	1661	3	26	255	87	1642	25	10	3960
Apprch %	13.1	86.7	0.2	7.1	69.3	23.6	97.9	1.5	0.6	
Total %	6.3	41.9	0.1	0.7	6.4	2.2	41.5	0.6	0.3	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.10.4TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 2

	PALM AVE Westbound				4TH ST Northbound				PALM AVE Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15													
07:15	24	79	1	104	1	27	7	35	120	4	0	124	263
07:30	10	67	1	78	2	23	4	29	105	0	0	105	212
07:45	6	77	0	83	0	20	8	28	120	1	4	125	236
08:00	7	88	0	95	2	21	3	26	97	1	1	99	220
Total Volume	47	311	2	360	5	91	22	118	442	6	5	453	931
% App. Total	13.1	86.4	0.6		4.2	77.1	18.6		97.6	1.3	1.1		
PHF	.490	.884	.500	.865	.625	.843	.688	.843	.921	.375	.313	.906	.885

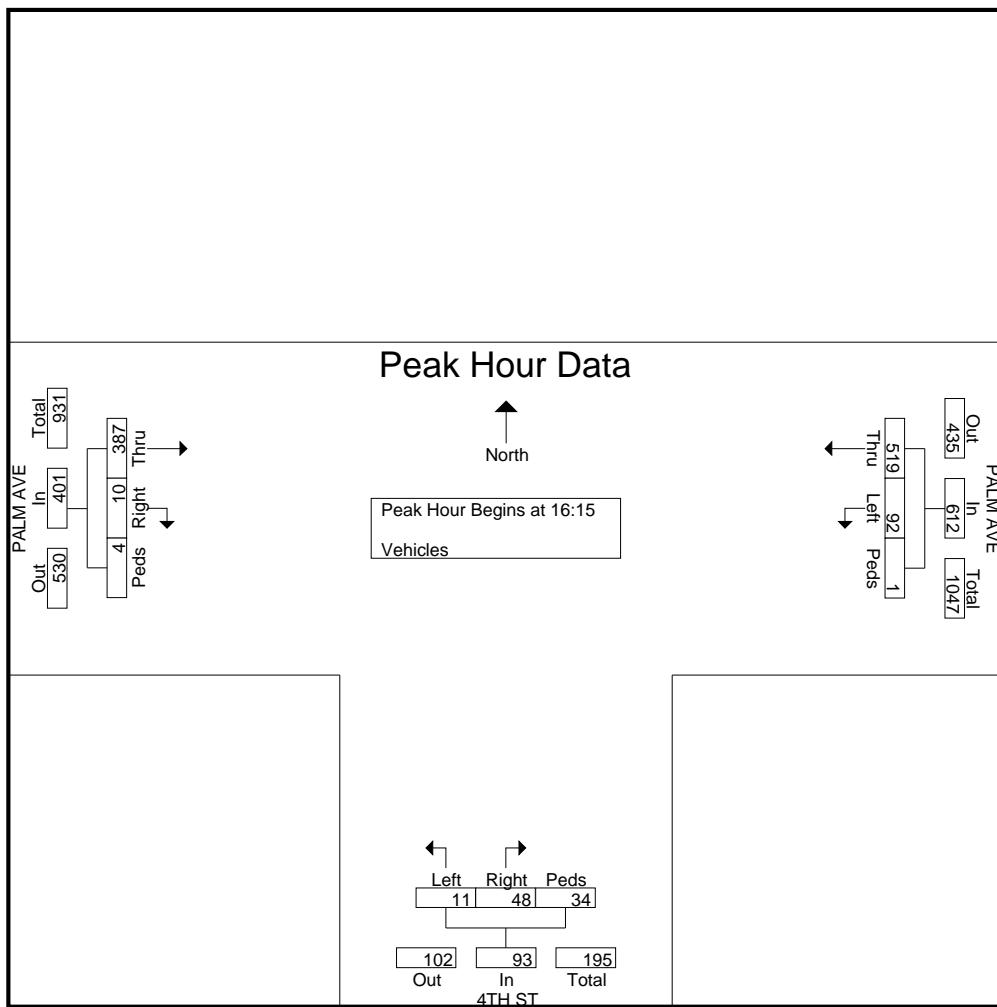


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.10.4TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 3

	PALM AVE Westbound				4TH ST Northbound				PALM AVE Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:15													
16:15	23	132	1	156	1	12	8	21	108	2	0	110	287
16:30	28	135	0	163	4	16	8	28	104	3	2	109	300
16:45	16	124	0	140	2	9	13	24	87	2	1	90	254
17:00	25	128	0	153	4	11	5	20	88	3	1	92	265
Total Volume	92	519	1	612	11	48	34	93	387	10	4	401	1106
% App. Total	15	84.8	0.2		11.8	51.6	36.6		96.5	2.5	1		
PHF	.821	.961	.250	.939	.688	.750	.654	.830	.896	.833	.500	.911	.922



# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.09.CORVINA ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 1

## Groups Printed- Vehicles

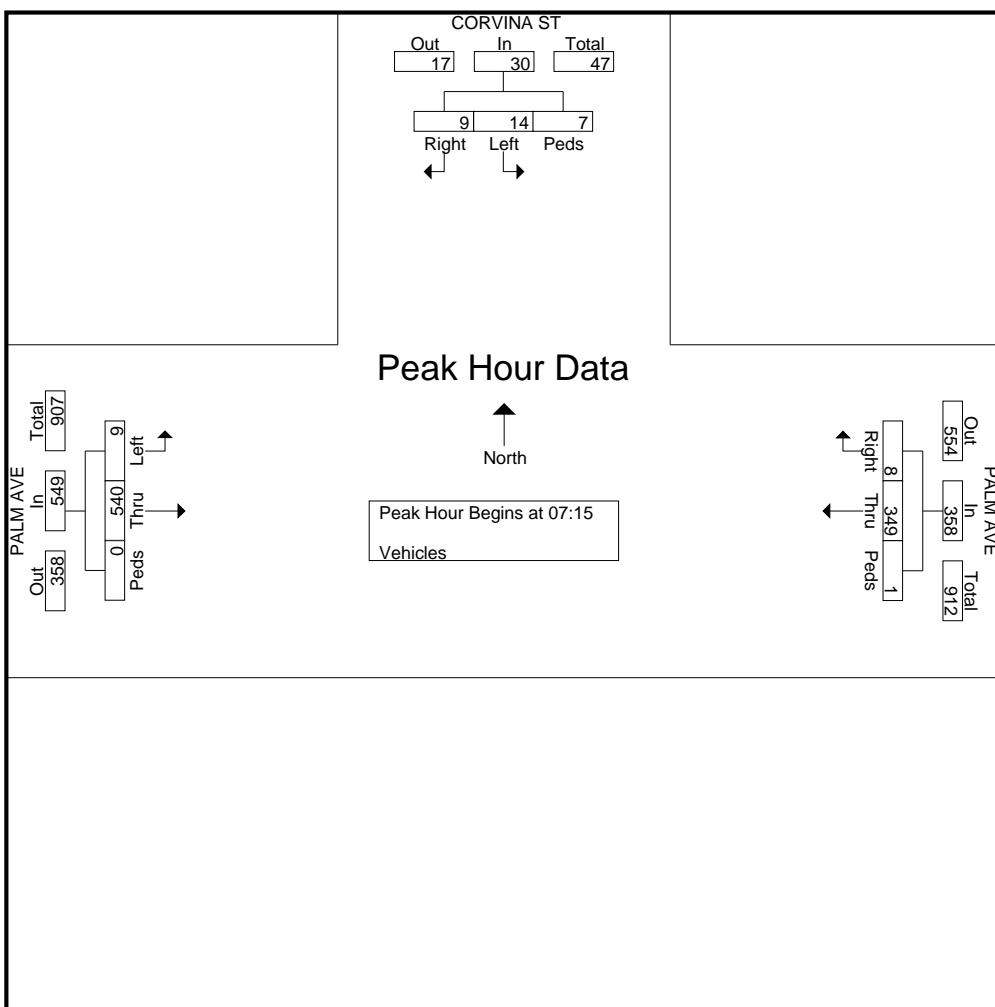
CORVINA ST Southbound				PALM AVE Westbound			PALM AVE Eastbound			
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Int. Total
07:00	7	2	0	56	3	0	0	124	0	192
07:15	3	5	1	95	0	1	1	153	0	259
07:30	7	1	3	78	3	0	2	128	0	222
07:45	0	3	0	81	1	0	4	138	0	227
Total	17	11	4	310	7	1	7	543	0	900
08:00	4	0	3	95	4	0	2	121	0	229
08:15	3	1	3	94	2	0	3	131	0	237
08:30	0	2	2	68	2	0	2	119	0	195
08:45	1	0	0	84	0	0	2	124	0	211
Total	8	3	8	341	8	0	9	495	0	872
<b>***BREAK***</b>										
16:00	4	3	2	135	0	0	1	96	0	241
16:15	3	2	3	149	3	0	1	116	0	277
16:30	3	9	6	153	1	0	3	113	0	288
16:45	1	1	0	136	4	0	0	90	0	232
Total	11	15	11	573	8	0	5	415	0	1038
17:00	1	0	3	149	7	0	3	97	0	260
17:15	1	2	0	155	3	2	3	94	0	260
17:30	1	5	3	164	7	0	1	115	0	296
17:45	1	3	2	147	5	0	5	102	0	265
Total	4	10	8	615	22	2	12	408	0	1081
Grand Total	40	39	31	1839	45	3	33	1861	0	3891
Apprch %	36.4	35.5	28.2	97.5	2.4	0.2	1.7	98.3	0	
Total %	1	1	0.8	47.3	1.2	0.1	0.8	47.8	0	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.09.CORVINA ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 2

	CORVINA ST Southbound				PALM AVE Westbound				PALM AVE Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15													
07:15	3	5	1	9	95	0	1	96	1	153	0	154	259
07:30	7	1	3	11	78	3	0	81	2	128	0	130	222
07:45	0	3	0	3	81	1	0	82	4	138	0	142	227
08:00	4	0	3	7	95	4	0	99	2	121	0	123	229
Total Volume	14	9	7	30	349	8	1	358	9	540	0	549	937
% App. Total	46.7	30	23.3		97.5	2.2	0.3		1.6	98.4	0		
PHF	.500	.450	.583	.682	.918	.500	.250	.904	.563	.882	.000	.891	.904

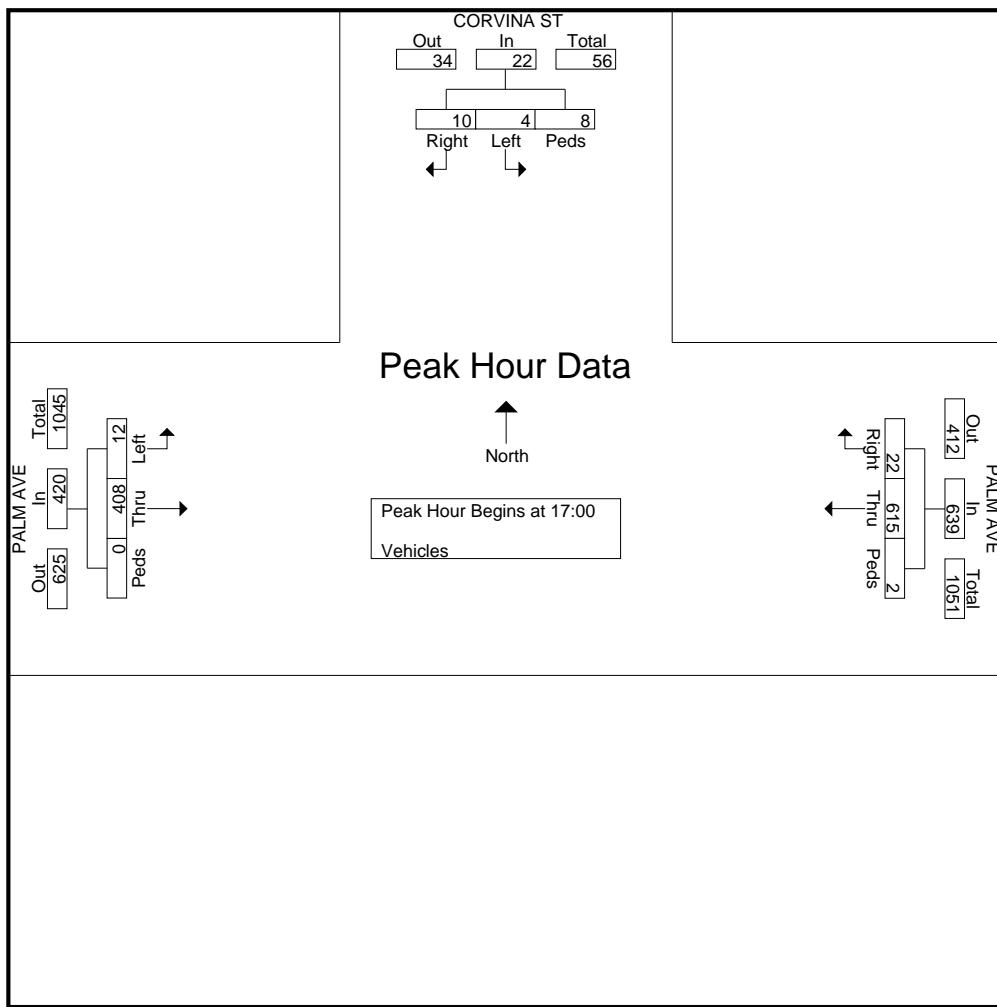


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.09.CORVINA ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 3

	CORVINA ST Southbound				PALM AVE Westbound				PALM AVE Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 17:00													
17:00	1	0	3	4	149	7	0	156	3	97	0	100	260
17:15	1	2	0	3	155	3	2	160	3	94	0	97	260
17:30	1	5	3	9	164	7	0	171	1	115	0	116	296
17:45	1	3	2	6	147	5	0	152	5	102	0	107	265
Total Volume	4	10	8	22	615	22	2	639	12	408	0	420	1081
% App. Total	18.2	45.5	36.4		96.2	3.4	0.3		2.9	97.1	0		
PHF	1.000	.500	.667	.611	.938	.786	.250	.934	.600	.887	.000	.905	.913



**True Count**  
 3401 First Ave. #123  
 San Diego, CA 92103

File Name : 1063.08.5TH ST.PALM AVE  
 Site Code : 00000000  
 Start Date : 4/26/2007  
 Page No : 1

**Groups Printed- Vehicles**

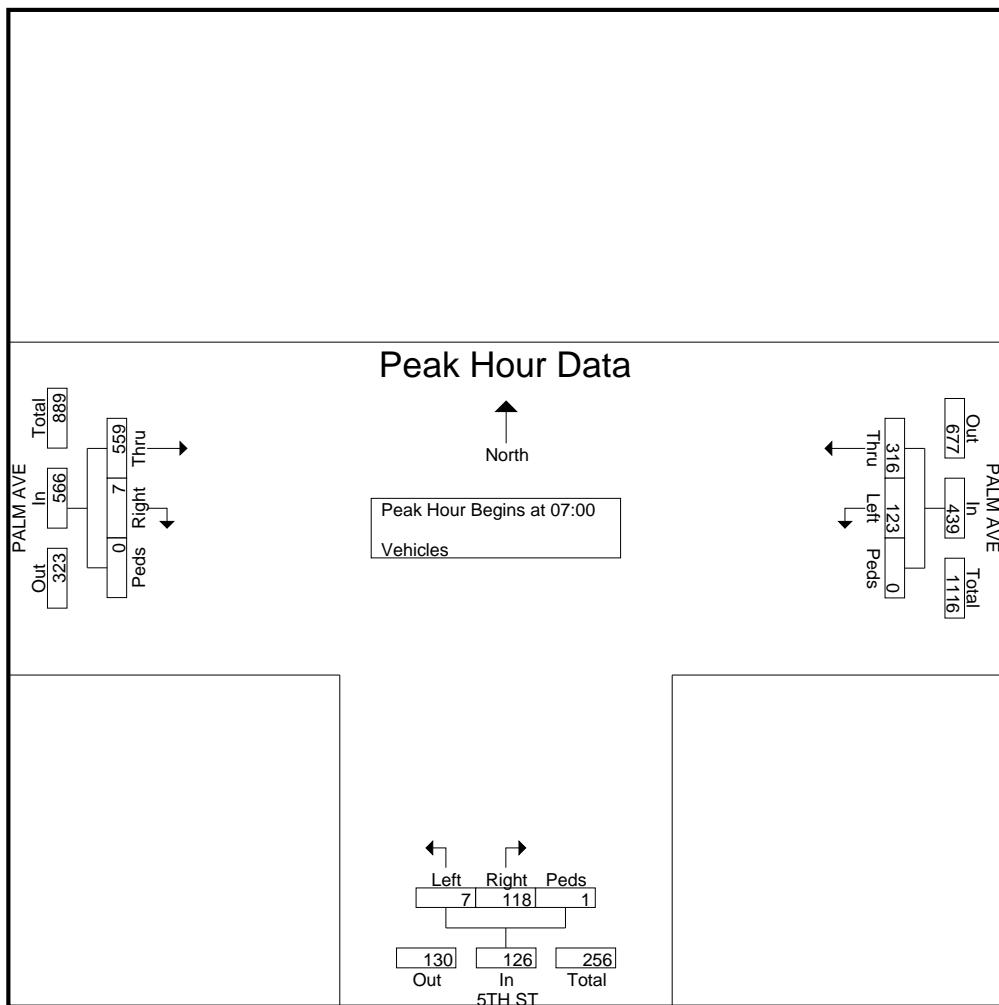
PALM AVE Westbound				5TH ST Northbound			PALM AVE Eastbound			Int. Total
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	
07:00	24	61	0	1	28	1	132	0	0	247
07:15	74	94	0	4	55	0	152	4	0	383
07:30	18	83	0	1	26	0	133	3	0	264
07:45	7	78	0	1	9	0	142	0	0	237
Total	123	316	0	7	118	1	559	7	0	1131
08:00	4	105	0	1	5	0	129	1	0	245
08:15	4	95	0	2	5	0	130	2	0	238
08:30	8	71	0	0	6	1	114	2	0	202
08:45	3	90	0	1	5	0	117	0	0	216
Total	19	361	0	4	21	1	490	5	0	901
<b>***BREAK***</b>										
16:00	5	147	0	0	7	0	118	0	0	277
16:15	7	159	0	0	2	0	126	0	0	294
16:30	10	154	0	0	2	2	115	1	0	284
16:45	5	139	0	1	3	5	97	1	0	251
Total	27	599	0	1	14	7	456	2	0	1106
17:00	11	144	0	1	5	2	96	2	0	261
17:15	9	169	1	3	5	0	94	0	0	281
17:30	9	158	0	2	4	0	115	1	0	289
17:45	7	148	0	3	1	0	108	5	0	272
Total	36	619	1	9	15	2	413	8	0	1103
Grand Total	205	1895	1	21	168	11	1918	22	0	4241
Apprch %	9.8	90.2	0	10.5	84	5.5	98.9	1.1	0	
Total %	4.8	44.7	0	0.5	4	0.3	45.2	0.5	0	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.08.5TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 2

	PALM AVE Westbound				5TH ST Northbound				PALM AVE Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00													
07:00	24	61	0	85	1	28	1	30	132	0	0	132	247
07:15	74	94	0	168	4	55	0	59	152	4	0	156	383
07:30	18	83	0	101	1	26	0	27	133	3	0	136	264
07:45	7	78	0	85	1	9	0	10	142	0	0	142	237
Total Volume	123	316	0	439	7	118	1	126	559	7	0	566	1131
% App. Total	28	72	0		5.6	93.7	0.8		98.8	1.2	0		
PHF	.416	.840	.000	.653	.438	.536	.250	.534	.919	.438	.000	.907	.738

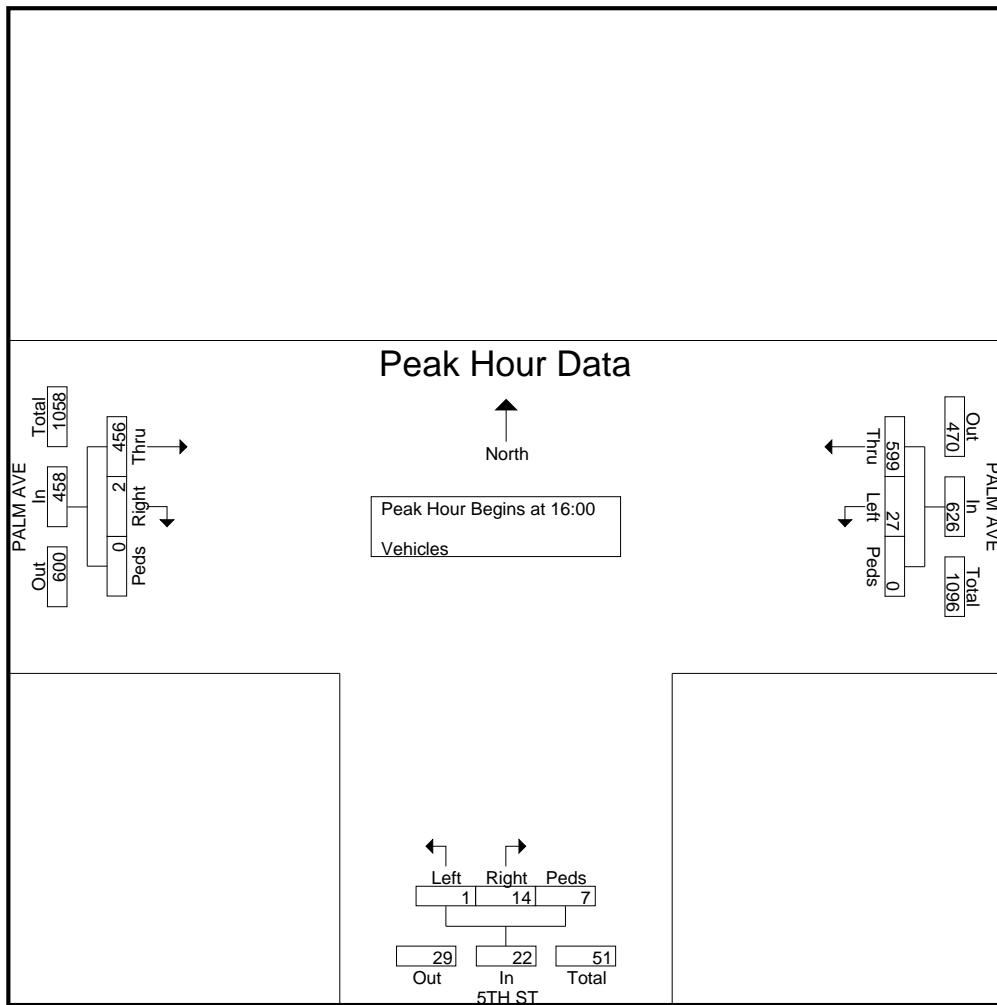


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.08.5TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 4/26/2007  
Page No : 3

	PALM AVE Westbound				5TH ST Northbound				PALM AVE Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:00													
16:00	5	147	0	152	0	7	0	7	118	0	0	118	277
16:15	7	159	0	166	0	2	0	2	126	0	0	126	294
16:30	10	154	0	164	0	2	2	4	115	1	0	116	284
16:45	5	139	0	144	1	3	5	9	97	1	0	98	251
Total Volume	27	599	0	626	1	14	7	22	456	2	0	458	1106
% App. Total	4.3	95.7	0		4.5	63.6	31.8		99.6	0.4	0		
PHF	.675	.942	.000	.943	.250	.500	.350	.611	.905	.500	.000	.909	.940



**True Count**  
 3401 First Ave. #123  
 San Diego, CA 92103

File Name : 1063.07.RAINBOW DR.PALM AVE  
 Site Code : 00000000  
 Start Date : 5/1/2007  
 Page No : 1

**Groups Printed- Vehicles**

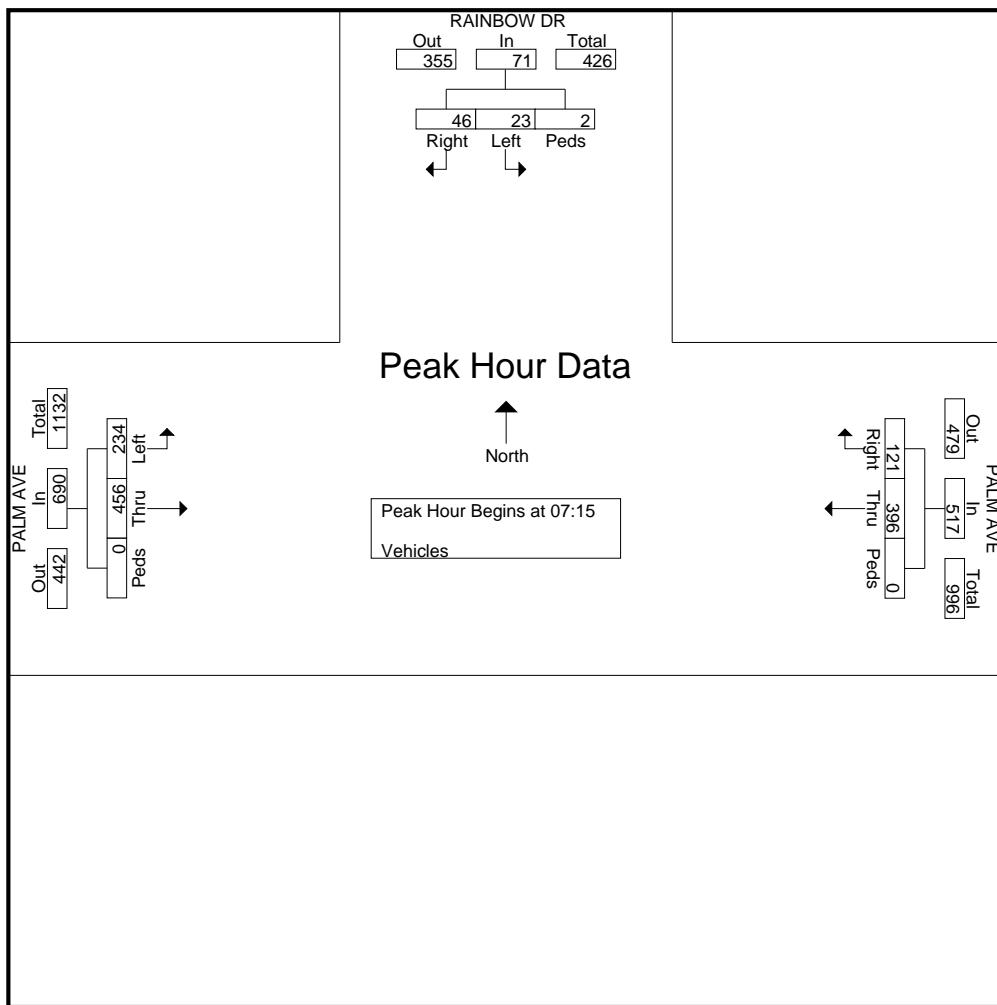
RAINBOW DR Southbound				PALM AVE Westbound			PALM AVE Eastbound			Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	
07:00	2	8	0	66	47	1	83	91	0	298
07:15	4	9	0	139	41	0	54	145	0	392
07:30	6	12	2	83	25	0	63	123	0	314
07:45	5	12	0	81	23	0	55	83	0	259
Total	17	41	2	369	136	1	255	442	0	1263
08:00	8	13	0	93	32	0	62	105	0	313
08:15	9	15	0	68	19	0	35	107	0	253
08:30	4	18	0	66	18	0	39	90	0	235
08:45	6	21	0	71	19	0	25	76	0	218
Total	27	67	0	298	88	0	161	378	0	1019
<b>***BREAK***</b>										
16:00	20	45	0	98	27	0	14	100	0	304
16:15	25	53	1	97	18	0	21	87	0	302
16:30	23	49	0	96	12	0	15	78	0	273
16:45	18	48	0	98	10	0	23	92	0	289
Total	86	195	1	389	67	0	73	357	0	1168
17:00	17	63	1	91	13	0	20	88	0	293
17:15	28	49	0	78	16	0	23	81	0	275
17:30	22	63	0	105	15	0	19	94	0	318
17:45	17	37	2	107	7	0	18	87	0	275
Total	84	212	3	381	51	0	80	350	0	1161
Grand Total	214	515	6	1437	342	1	569	1527	0	4611
Apprch %	29.1	70.1	0.8	80.7	19.2	0.1	27.1	72.9	0	
Total %	4.6	11.2	0.1	31.2	7.4	0	12.3	33.1	0	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.07.RAINBOW DR.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 2

	RAINBOW DR Southbound				PALM AVE Westbound				PALM AVE Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15													
07:15	4	9	0	13	139	41	0	180	54	145	0	199	392
07:30	6	12	2	20	83	25	0	108	63	123	0	186	314
07:45	5	12	0	17	81	23	0	104	55	83	0	138	259
08:00	8	13	0	21	93	32	0	125	62	105	0	167	313
Total Volume	23	46	2	71	396	121	0	517	234	456	0	690	1278
% App. Total	32.4	64.8	2.8		76.6	23.4	0		33.9	66.1	0		
PHF	.719	.885	.250	.845	.712	.738	.000	.718	.929	.786	.000	.867	.815

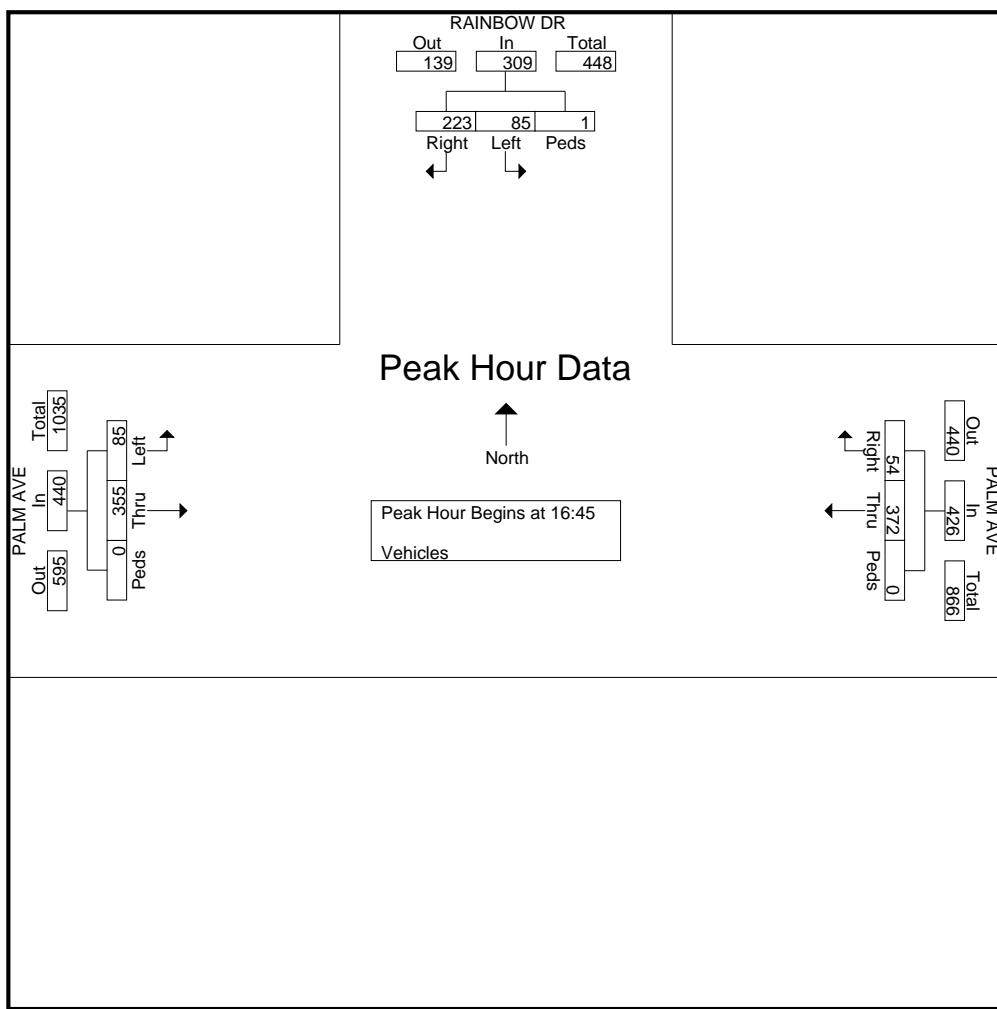


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.07.RAINBOW DR.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 3

	RAINBOW DR Southbound				PALM AVE Westbound				PALM AVE Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:45													
16:45	18	48	0	66	98	10	0	108	23	92	0	115	289
17:00	17	63	1	81	91	13	0	104	20	88	0	108	293
17:15	28	49	0	77	78	16	0	94	23	81	0	104	275
17:30	22	63	0	85	105	15	0	120	19	94	0	113	318
Total Volume	85	223	1	309	372	54	0	426	85	355	0	440	1175
% App. Total	27.5	72.2	0.3		87.3	12.7	0		19.3	80.7	0		
PHF	.759	.885	.250	.909	.886	.844	.000	.888	.924	.944	.000	.957	.924



# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.06.CAROLINA ST.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 1

## Groups Printed- Vehicles

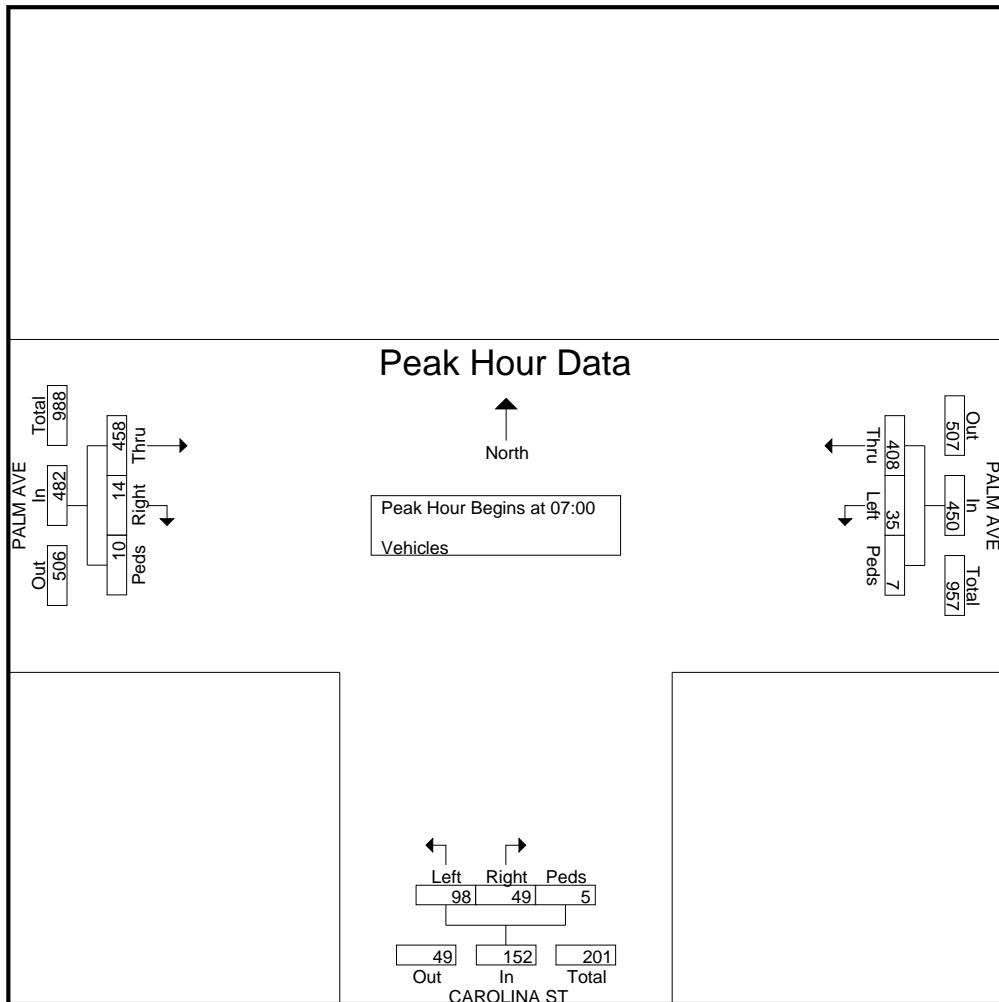
PALM AVE Westbound				CAROLINA ST Northbound			PALM AVE Eastbound			
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Int. Total
07:00	8	102	3	30	15	2	95	3	2	260
07:15	9	141	2	30	17	1	141	3	5	349
07:30	11	87	1	15	14	1	128	5	3	265
07:45	7	78	1	23	3	1	94	3	0	210
Total	35	408	7	98	49	5	458	14	10	1084
08:00	3	101	1	21	2	0	98	7	3	236
08:15	11	71	5	16	3	2	117	6	3	234
08:30	6	81	2	9	7	0	99	2	6	212
08:45	4	75	2	11	5	0	84	2	3	186
Total	24	328	10	57	17	2	398	17	15	868
<b>***BREAK***</b>										
16:00	8	121	2	6	5	2	122	11	1	278
16:15	7	123	4	7	6	1	112	10	5	275
16:30	7	106	7	8	11	0	103	15	1	258
16:45	9	99	9	7	4	2	101	13	2	246
Total	31	449	22	28	26	5	438	49	9	1057
17:00	11	116	1	3	7	2	109	19	4	272
17:15	8	99	7	7	4	2	99	4	10	240
17:30	9	94	1	11	6	0	106	20	5	252
17:45	8	115	4	5	5	1	96	15	5	254
Total	36	424	13	26	22	5	410	58	24	1018
Grand Total	126	1609	52	209	114	17	1704	138	58	4027
Apprch %	7.1	90	2.9	61.5	33.5	5	89.7	7.3	3.1	
Total %	3.1	40	1.3	5.2	2.8	0.4	42.3	3.4	1.4	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.06.CAROLINA ST.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 2

	PALM AVE Westbound				CAROLINA ST Northbound				PALM AVE Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00													
07:00	8	102	3	113	30	15	2	47	95	3	2	100	260
07:15	9	141	2	152	30	17	1	48	141	3	5	149	349
07:30	11	87	1	99	15	14	1	30	128	5	3	136	265
07:45	7	78	1	86	23	3	1	27	94	3	0	97	210
Total Volume	35	408	7	450	98	49	5	152	458	14	10	482	1084
% App. Total	7.8	90.7	1.6		64.5	32.2	3.3		95	2.9	2.1		
PHF	.795	.723	.583	.740	.817	.721	.625	.792	.812	.700	.500	.809	.777

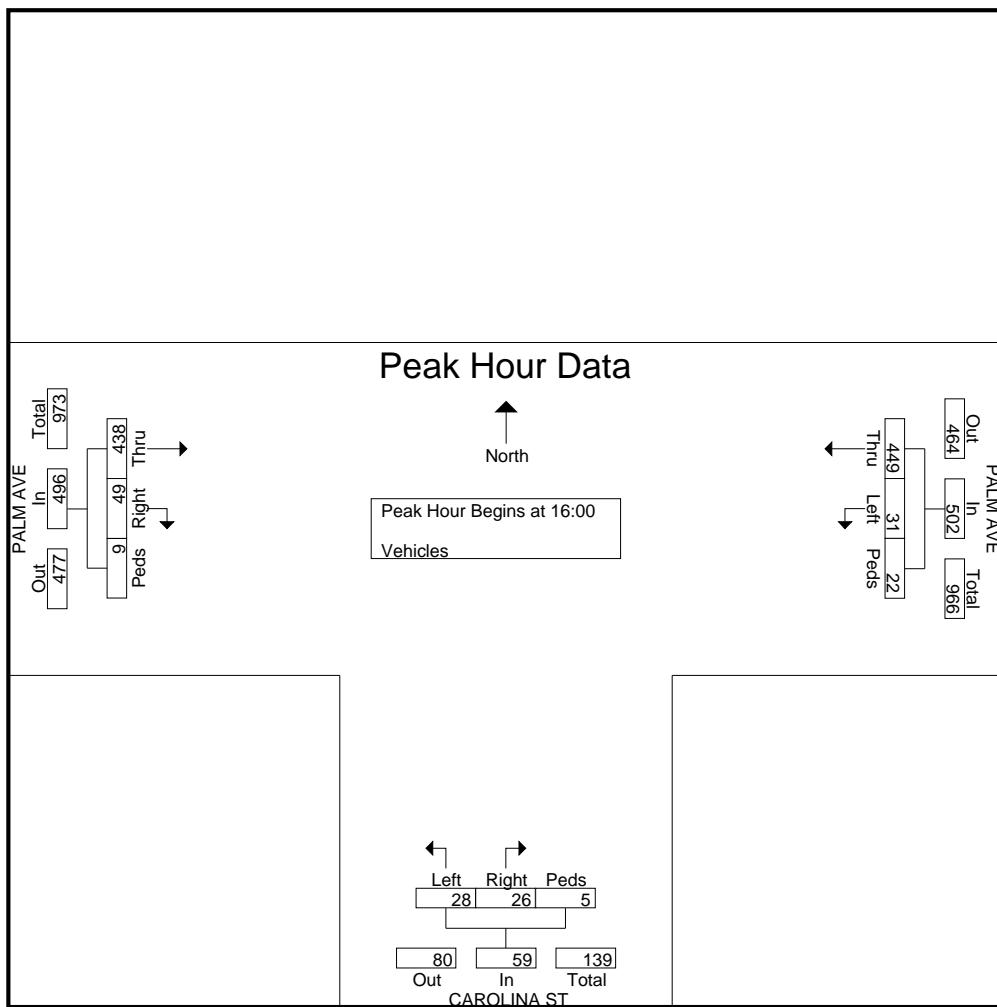


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.06.CAROLINA ST.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 3

	PALM AVE Westbound				CAROLINA ST Northbound				PALM AVE Eastbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 16:00													
16:00	8	121	2	131	6	5	2	13	122	11	1	134	278
16:15	7	123	4	134	7	6	1	14	112	10	5	127	275
16:30	7	106	7	120	8	11	0	19	103	15	1	119	258
16:45	9	99	9	117	7	4	2	13	101	13	2	116	246
Total Volume	31	449	22	502	28	26	5	59	438	49	9	496	1057
% App. Total	6.2	89.4	4.4		47.5	44.1	8.5		88.3	9.9	1.8		
PHF	.861	.913	.611	.937	.875	.591	.625	.776	.898	.817	.450	.925	.951



**True Count**  
 3401 First Ave. #123  
 San Diego, CA 92103

File Name : 1063.05.7TH ST.PALM AVE  
 Site Code : 00000000  
 Start Date : 5/1/2007  
 Page No : 1

**Groups Printed- Vehicles**

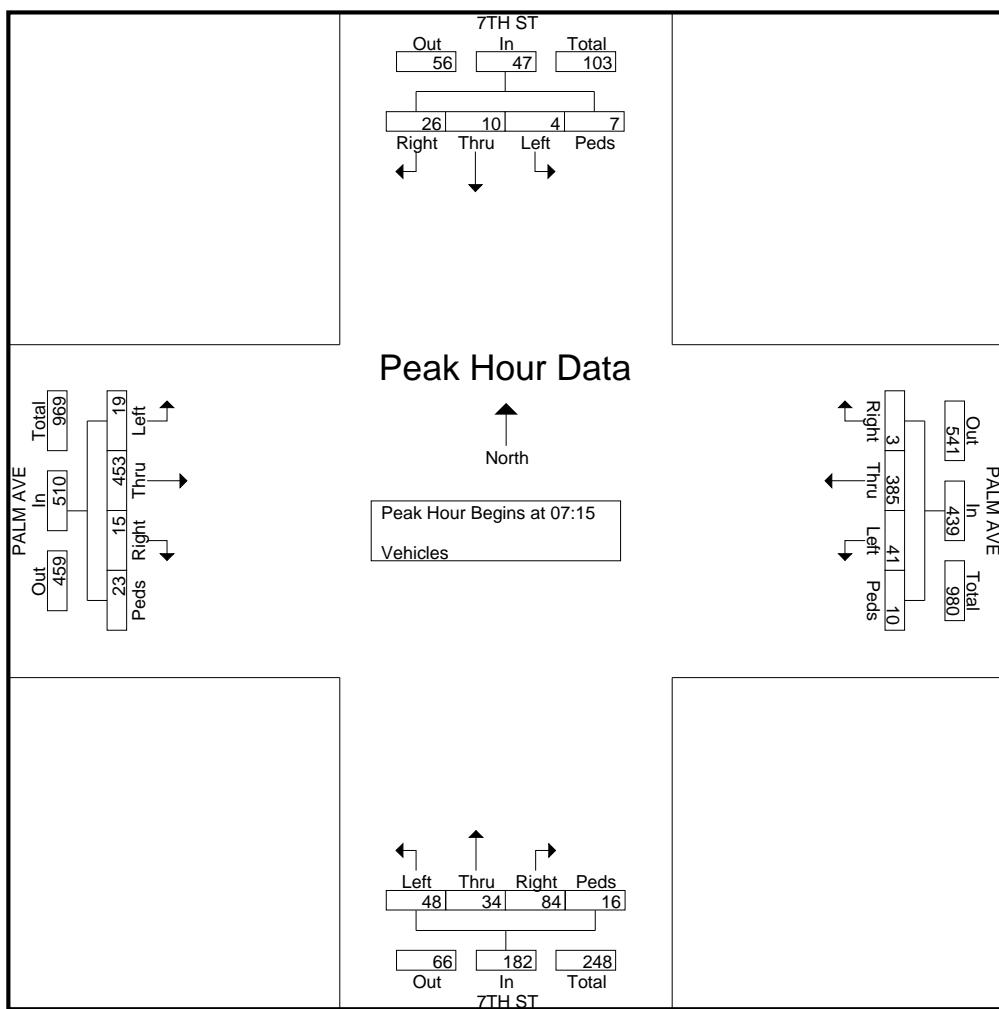
	7TH ST Southbound				PALM AVE Westbound				7TH ST Northbound				PALM AVE Eastbound				Int. Total	
	Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00		0	1	6	2	6	95	2	1	8	6	12	2	5	109	0	10	265
07:15		1	2	11	2	8	129	0	5	14	12	29	6	7	143	4	11	384
07:30		0	3	6	1	8	95	1	1	8	9	32	4	5	121	7	4	305
07:45		0	1	5	2	9	78	0	2	6	3	13	1	4	89	4	4	221
Total		1	7	28	7	31	397	3	9	36	30	86	13	21	462	15	29	1175
08:00		3	4	4	2	16	83	2	2	20	10	10	5	3	100	0	4	268
08:15		1	4	5	1	12	63	2	6	11	13	16	3	3	101	9	3	253
08:30		1	6	5	0	18	72	2	3	11	2	21	5	4	99	2	1	252
08:45		0	4	6	0	12	68	1	2	12	9	17	2	4	102	5	0	244
Total		5	18	20	3	58	286	7	13	54	34	64	15	14	402	16	8	1017
<b>***BREAK***</b>																		
16:00		6	5	14	0	16	107	10	5	8	7	13	4	9	96	13	1	314
16:15		10	11	13	1	19	110	1	4	15	7	11	5	4	101	12	1	325
16:30		3	5	8	2	12	99	0	8	6	6	5	9	6	95	7	3	274
16:45		5	14	8	1	12	94	1	3	6	5	13	4	9	87	2	4	268
Total		24	35	43	4	59	410	12	20	35	25	42	22	28	379	34	9	1181
17:00		6	7	9	1	17	113	0	3	5	3	11	1	12	102	8	2	300
17:15		3	13	9	2	14	92	1	0	6	12	14	3	5	92	7	0	273
17:30		5	10	11	1	8	84	4	1	13	7	16	2	5	98	3	3	271
17:45		0	8	9	0	11	117	0	0	7	2	14	5	5	96	3	0	277
Total		14	38	38	4	50	406	5	4	31	24	55	11	27	388	21	5	1121
Grand Total		44	98	129	18	198	1499	27	46	156	113	247	61	90	1631	86	51	4494
Apprch %		15.2	33.9	44.6	6.2	11.2	84.7	1.5	2.6	27	19.6	42.8	10.6	4.8	87.8	4.6	2.7	
Total %		1	2.2	2.9	0.4	4.4	33.4	0.6	1	3.5	2.5	5.5	1.4	2	36.3	1.9	1.1	

# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.05.7TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 2

	7TH ST Southbound					PALM AVE Westbound					7TH ST Northbound					PALM AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	1	2	<b>11</b>	2	<b>16</b>	8	<b>129</b>	0	<b>5</b>	<b>142</b>	14	<b>12</b>	29	<b>6</b>	<b>61</b>	7	<b>143</b>	4	<b>11</b>	<b>165</b>	<b>384</b>
07:30	0	3	6	1	10	8	95	1	1	105	8	9	<b>32</b>	4	53	5	121	7	4	137	305
07:45	0	1	5	2	8	9	78	0	2	89	6	3	13	1	23	4	89	4	4	101	221
08:00	<b>3</b>	<b>4</b>	4	2	13	<b>16</b>	83	<b>2</b>	2	103	<b>20</b>	10	10	5	45	3	100	0	4	107	268
Total Volume	4	10	26	7	47	41	385	3	10	439	48	34	84	16	182	19	453	15	23	510	1178
% App. Total	8.5	21.3	55.3	14.9		9.3	87.7	0.7	2.3		26.4	18.7	46.2	8.8		3.7	88.8	2.9	4.5		
PHF	.333	.625	.591	.875	.734	.641	.746	.375	.500	.773	.600	.708	.656	.667	.746	.679	.792	.536	.523	.773	.767

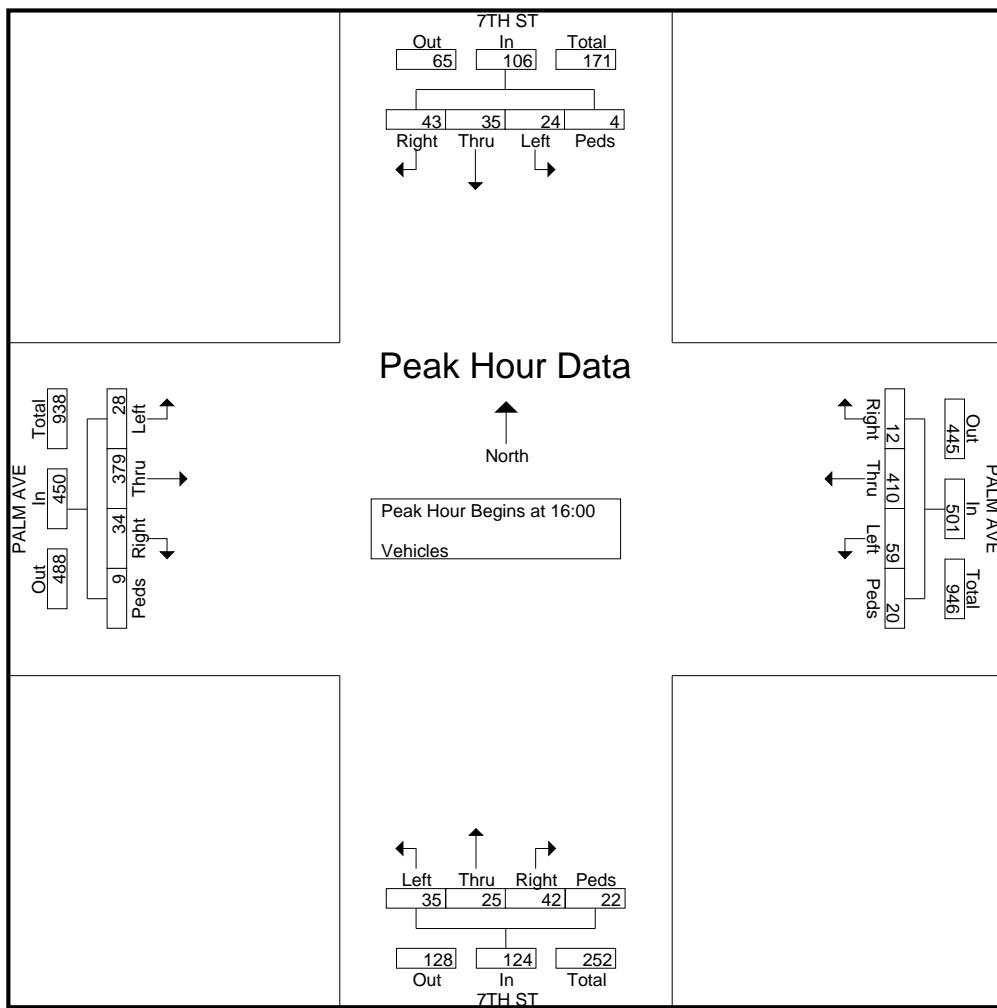


# True Count

3401 First Ave. #123  
San Diego, CA 92103

File Name : 1063.05.7TH ST.PALM AVE  
Site Code : 00000000  
Start Date : 5/1/2007  
Page No : 3

	7TH ST Southbound					PALM AVE Westbound					7TH ST Northbound					PALM AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour Begins at 16:00																					
16:00	6	5	<b>14</b>	0	25	16	107	<b>10</b>	5	<b>138</b>	8	7	<b>13</b>	4	32	<b>9</b>	96	<b>13</b>	1	<b>119</b>	314
16:15	<b>10</b>	11	13	1	<b>35</b>	<b>19</b>	<b>110</b>	1	4	134	<b>15</b>	7	11	5	<b>38</b>	4	<b>101</b>	12	1	118	<b>325</b>
16:30	3	5	8	<b>2</b>	18	12	99	0	<b>8</b>	119	6	6	5	<b>9</b>	26	6	95	7	3	111	274
16:45	5	<b>14</b>	8	1	28	12	94	1	3	110	6	5	13	4	28	9	87	2	<b>4</b>	102	268
Total Volume	24	35	43	4	106	59	410	12	20	501	35	25	42	22	124	28	379	34	9	450	1181
% App. Total	22.6	33	40.6	3.8		11.8	81.8	2.4	4		28.2	20.2	33.9	17.7		6.2	84.2	7.6	2		
PHF	.600	.625	.768	.500	.757	.776	.932	.300	.625	.908	.583	.893	.808	.611	.816	.778	.938	.654	.563	.945	.908



## MetroCount Traffic Executive Event Counts

### EventCount-222 -- English (ENU)

#### Datasets:

**Site:** [1063.02] PALM AVE(ALABAMA ST-4TH ST) EASTBOUND  
**Input A:** 4 - West bound. - Excluded from totals. (0)  
**Input B:** 2 - East bound. - Added to totals. (1)  
**Survey Duration:** 22:15 Wednesday, May 02, 2007 => 19:35 Sunday, May 06, 2007  
**File:** C:\True Count\Projects\1063 IB ECO BIKE WAY\1063.0206May2007.EC0 (Regular)  
**Identifier:** R8319BB9 MC56-L5 [MC55] (c)Microcom 19Oct04  
**Algorithm:** Event Count  
**Data type:** Axle sensors - Separate (Count)

#### Profile:

**Filter time:** 0:00 Thursday, May 03, 2007 => 0:00 Friday, May 04, 2007  
**Name:** Factory default profile  
**Scheme:** Count events divided by two.  
**Units:** Metric (meter, kilometer, m/s, km/h, kg, tonne)  
**In profile:** Events = 12503 / 49170 (25.43%)

#### \* Thursday, May 03, 2007=6723, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
<b>49</b>	<b>39</b>	<b>21</b>	<b>17</b>	<b>55</b>	<b>223</b>	<b>423</b>	<b>504</b>	<b>466</b>	<b>365</b>	<b>351</b>	<b>432</b>	<b>420</b>	<b>370</b>	<b>399</b>	<b>442</b>	<b>383</b>	<b>376</b>	<b>396</b>	<b>321</b>	<b>277</b>	<b>172</b>	<b>129</b>	<b>93</b>
12	14	10	4	8	38	91	116	<b>114</b>	101	91	98	100	98	93	115	111	99	107	76	88	43	29	28
15	10	1	4	7	40	108	127	<b>144</b>	79	94	105	96	91	106	116	106	74	105	80	66	38	37	14
11	6	9	8	13	76	129	<b>141</b>	112	101	89	124	109	107	108	112	92	99	92	85	65	37	35	24
11	9	1	1	27	69	95	<b>120</b>	96	84	77	105	115	74	92	99	74	104	92	80	58	54	28	27

AM Peak 0730 - 0830 (519), AM PHF=0.90

## MetroCount Traffic Executive Event Counts

### EventCount-221 -- English (ENU)

#### Datasets:

**Site:** [1063.02] PALM AVE(ALABAMA ST-4TH ST) WESTBOUND  
**Input A:** 4 - West bound. - Added to totals. (1)  
**Input B:** 2 - East bound. - Excluded from totals. (0)  
**Survey Duration:** 22:15 Wednesday, May 02, 2007 => 19:35 Sunday, May 06, 2007  
**File:** C:\True Count\Projects\1063 IB ECO BIKE WAY\1063.0206May2007.EC0 (Regular)  
**Identifier:** R8319BB9 MC56-L5 [MC55] (c)Microcom 19Oct04  
**Algorithm:** Event Count  
**Data type:** Axle sensors - Separate (Count)

#### Profile:

**Filter time:** 0:00 Thursday, May 03, 2007 => 0:00 Friday, May 04, 2007  
**Name:** Factory default profile  
**Scheme:** Count events divided by two.  
**Units:** Metric (meter, kilometer, m/s, km/h, kg, tonne)  
**In profile:** Events = 12503 / 49170 (25.43%)

#### \* Thursday, May 03, 2007=5779, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
<b>57</b>	<b>33</b>	<b>16</b>	<b>11</b>	<b>16</b>	<b>44</b>	<b>102</b>	<b>230</b>	<b>295</b>	<b>249</b>	<b>276</b>	<b>334</b>	<b>344</b>	<b>394</b>	<b>442</b>	<b>452</b>	<b>437</b>	<b>480</b>	<b>451</b>	<b>355</b>	<b>270</b>	<b>204</b>	<b>166</b>	<b>121</b>	
21	6	4	4	2	7	21	39	79	63	55	<b>87</b>	75	109	116	113	116	116	115	83	74	58	47	27	
13	11	1	3	4	10	16	66	75	52	65	<b>79</b>	80	100	109	119	96	124	138	102	66	50	42	35	-
8	6	6	3	4	11	25	51	61	65	76	<b>79</b>	80	82	102	129	114	134	92	89	66	60	40	29	-
15	10	5	1	6	16	40	74	80	69	80	<b>89</b>	109	103	115	91	111	106	106	81	64	36	37	30	-

AM Peak 1100 - 1200 (334), AM PHF=0.94

## MetroCount Traffic Executive Event Counts

### EventCount-219 -- English (ENU)

#### Datasets:

**Site:** [1063.01] PALM AVE(CAROLINA ST-RAINBOW DR) EASTBOUND  
**Input A:** 2 - East bound. - Added to totals. (1)  
**Input B:** 4 - West bound. - Excluded from totals. (0)  
**Survey Duration:** 23:11 Monday, April 30, 2007 => 21:10 Sunday, May 06, 2007  
**File:** C:\True Count\Projects\1063 IB ECO BIKE WAY\1063.0106May2007.EC0 (Base)  
**Identifier:** T575QTP3 MC56-L5 [MC55] (c)Microcom 19Oct04  
**Algorithm:** Event Count  
**Data type:** Axle sensors - Split (Count)

#### Profile:

**Filter time:** 0:00 Tuesday, May 01, 2007 => 0:00 Wednesday, May 02, 2007  
**Name:** Factory default profile  
**Scheme:** Count events divided by two.  
**Units:** Metric (meter, kilometer, m/s, km/h, kg, tonne)  
**In profile:** Events = 13953 / 28162 (49.55%)

#### \* Tuesday, May 01, 2007=6832, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
48	33	28	22	50	152	248	465	429	368	377	400	403	403	506	468	484	482	400	338	269	222	154	83
14	6	11	7	7	30	63	93	115	91	101	118	107	95	99	111	134	132	112	82	67	79	50	33
7	6	5	2	13	26	56	149	128	98	82	98	107	108	127	129	125	100	99	94	68	60	34	20
19	10	6	9	8	44	76	134	101	95	81	102	89	98	171	111	116	134	94	86	71	38	41	18
8	11	6	4	22	52	53	89	85	84	113	82	100	102	109	117	109	116	95	76	63	45	29	12

AM Peak 0715 - 0815 (487), AM PHF=0.82

## MetroCount Traffic Executive Event Counts

### EventCount-220 -- English (ENU)

#### Datasets:

**Site:** [1063.01] PALM AVE(CAROLINA ST-RAINBOW DR) WESTBOUND  
**Input A:** 2 - East bound. - Excluded from totals. (0)  
**Input B:** 4 - West bound. - Added to totals. (1)  
**Survey Duration:** 23:11 Monday, April 30, 2007 => 21:10 Sunday, May 06, 2007  
**File:** C:\True Count\Projects\1063 IB ECO BIKE WAY\1063.0106May2007.EC0 (Base)  
**Identifier:** T575QTP3 MC56-L5 [MC55] (c)Microcom 19Oct04  
**Algorithm:** Event Count  
**Data type:** Axle sensors - Split (Count)

#### Profile:

**Filter time:** 0:00 Tuesday, May 01, 2007 => 0:00 Wednesday, May 02, 2007  
**Name:** Factory default profile  
**Scheme:** Count events divided by two.  
**Units:** Metric (meter, kilometer, m/s, km/h, kg, tonne)  
**In profile:** Events = 13953 / 28162 (49.55%)

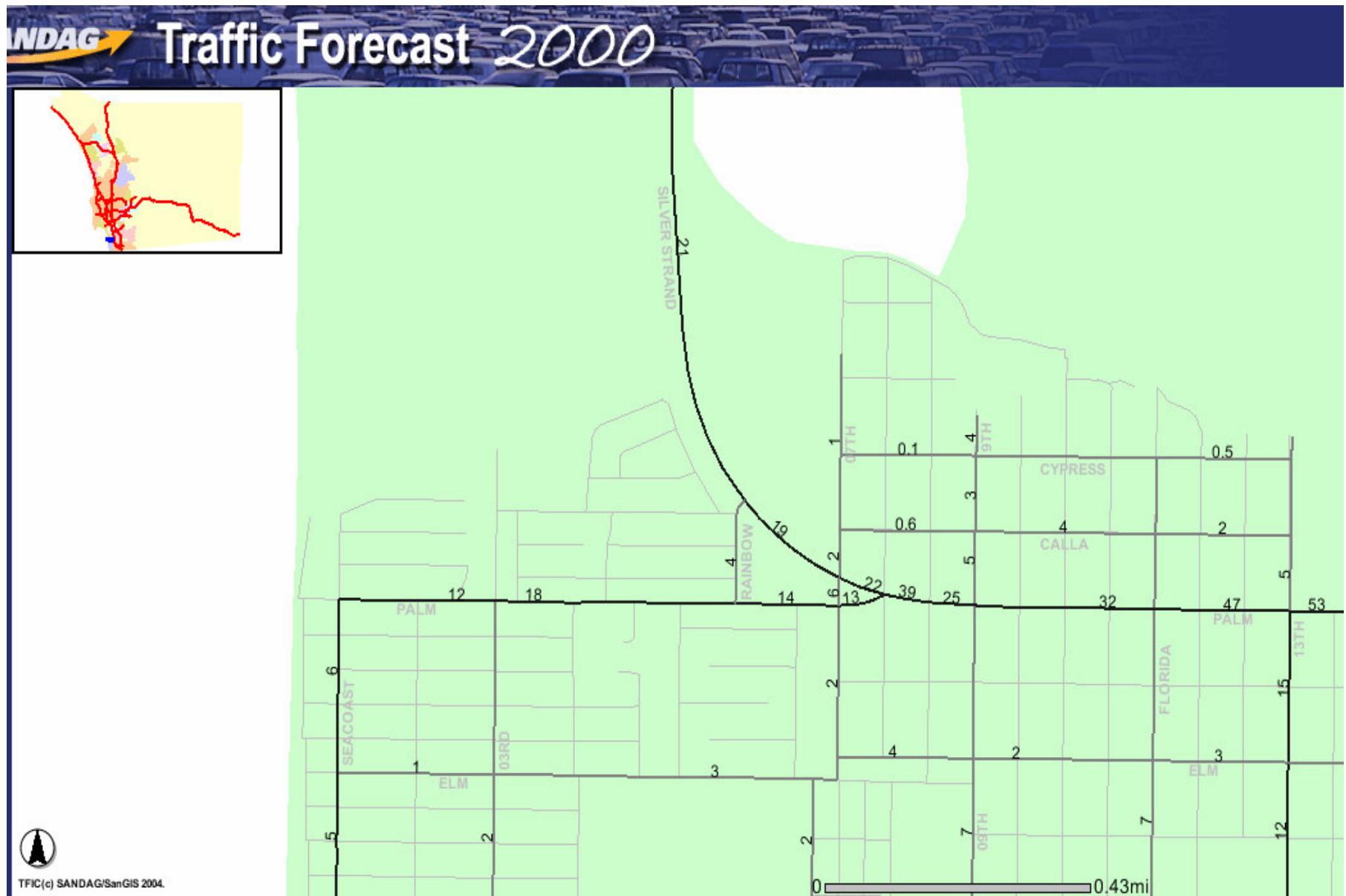
#### \* Tuesday, May 01, 2007=7121, 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
52	40	25	14	27	117	298	600	446	310	314	366	404	404	464	497	511	485	501	420	297	258	173	98
14	8	10	3	5	20	42	142	141	80	61	88	106	97	118	126	123	120	125	118	74	79	57	31
14	11	6	2	4	28	69	209	102	82	71	108	82	99	108	111	137	105	164	104	68	67	54	23
12	8	4	4	8	40	89	127	102	70	89	84	99	109	110	121	127	136	118	107	82	44	30	27
12	13	5	5	10	29	98	122	101	78	93	86	117	99	128	139	124	124	94	91	73	68	32	17

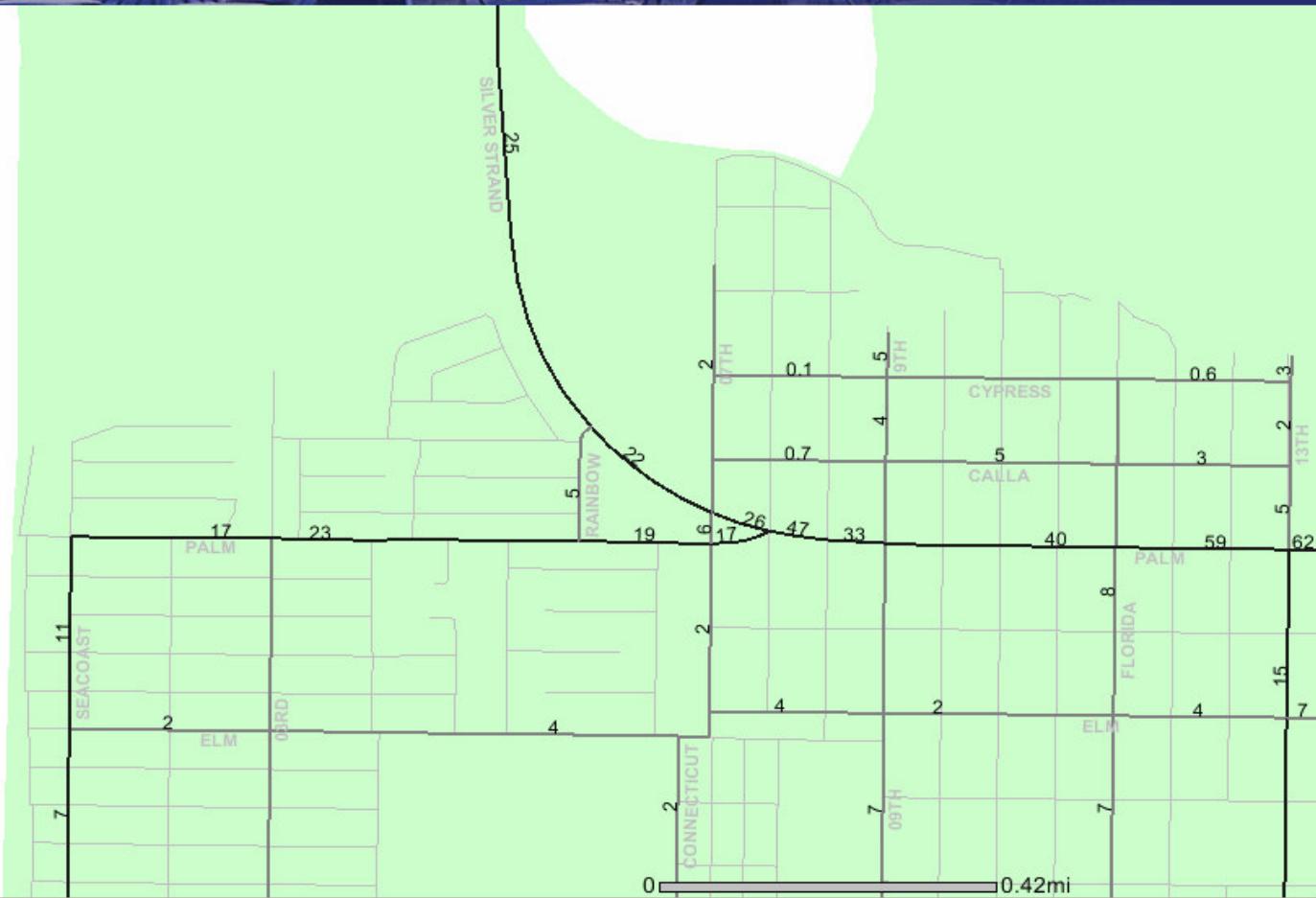
AM Peak 0700 - 0800 (600), AM PHF=0.72

## **APPENDIX C**

### **MODELING INFORMATION / CUMULATIVE PROJECT INFORMATION**



# Traffic Forecast 2030



## 4.0 PROJECT TRAFFIC GENERATION

The number of trips estimated to be generated by the proposed project is based on traffic generation rates published by the San Diego Association of Governments (SANDAG) in April 2002.

**Table 4–1** summarizes the daily, AM/PM peak hour traffic volumes generated by the expansion of the Hotel. The hotel rate accounts for customer, employee, and delivery trips. A “quality” restaurant was assumed for the restaurant trip generation rate.

*Table 4–1* indicates that the project is calculated to generate a net of 597 ADT with 14 inbound and 19 outbound trips during the AM peak hour, and 33 inbound and 19 outbound trips during the PM peak hour. This is after subtracting the traffic from the existing hotel rooms.

**TABLE 4–1**  
**PROJECT TRIP GENERATION**

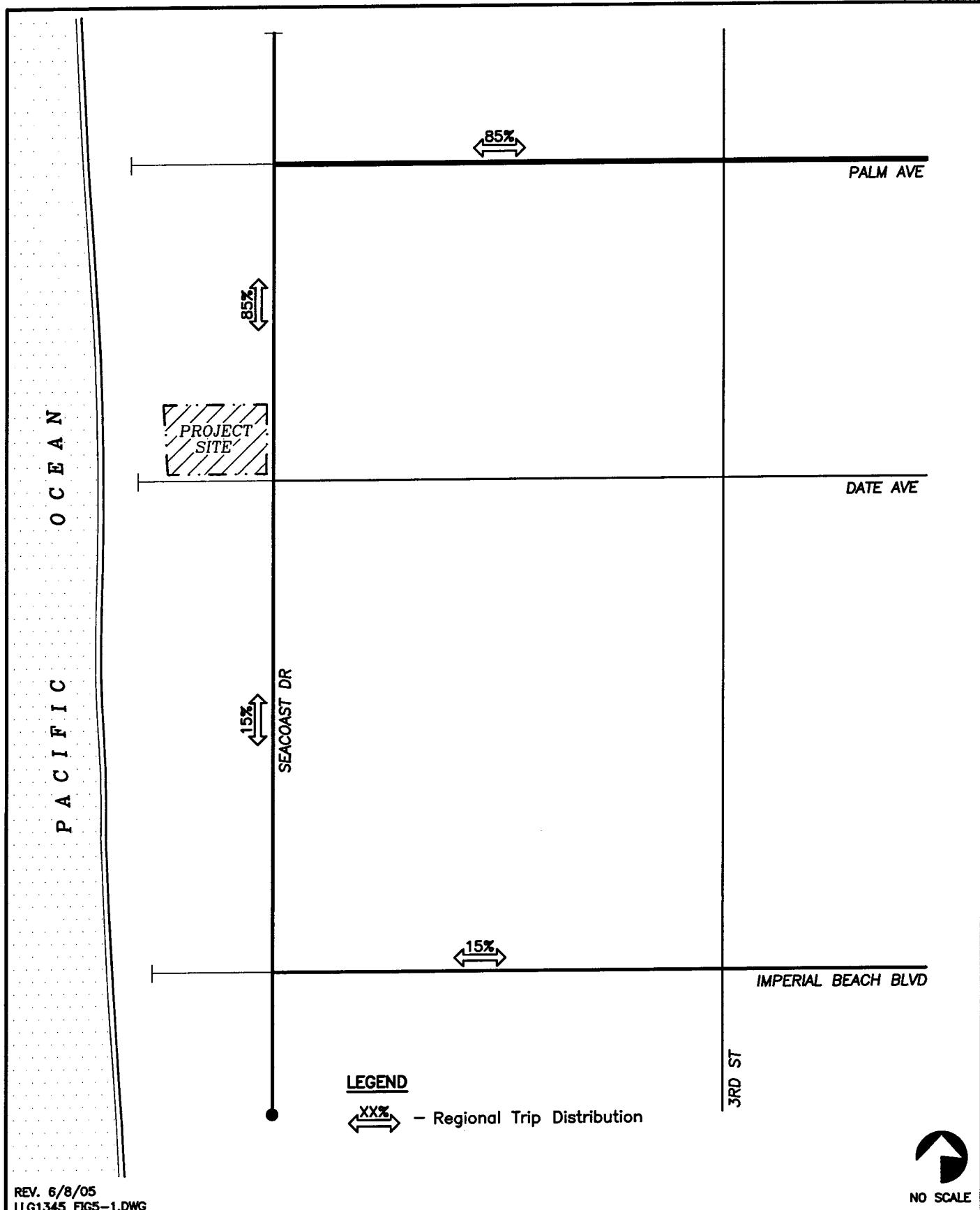
Use	Site	Daily Trip Ends (ADT)		AM Peak Hour				PM Peak Hour			
		Rate	Volume	% of ADT	In:Out		Volume		% of ADT	In:Out	
					Split	In	Out	Split		In	Out
Proposed Hotel	81 rooms	9/room	729	8%	40%: 60%	23	35	9%	60%: 40%	39	26
Restaurant	2,100 SF	100/KSF	210	1%	60%: 40%	1	1	8%	70%: 30%	12	5
Existing Hotel	38 rooms	9/room	-342	8%	40%: 60%	-11	-16	9%	60%: 40%	-18	-12
<b>Net Increase</b>		-	<b>597</b>	-	-	<b>14</b>	<b>19</b>	-	-	<b>33</b>	<b>19</b>

Source: SANDAG “Brief Guide to Vehicular Generation Rates in the San Diego Region,” April 2002.

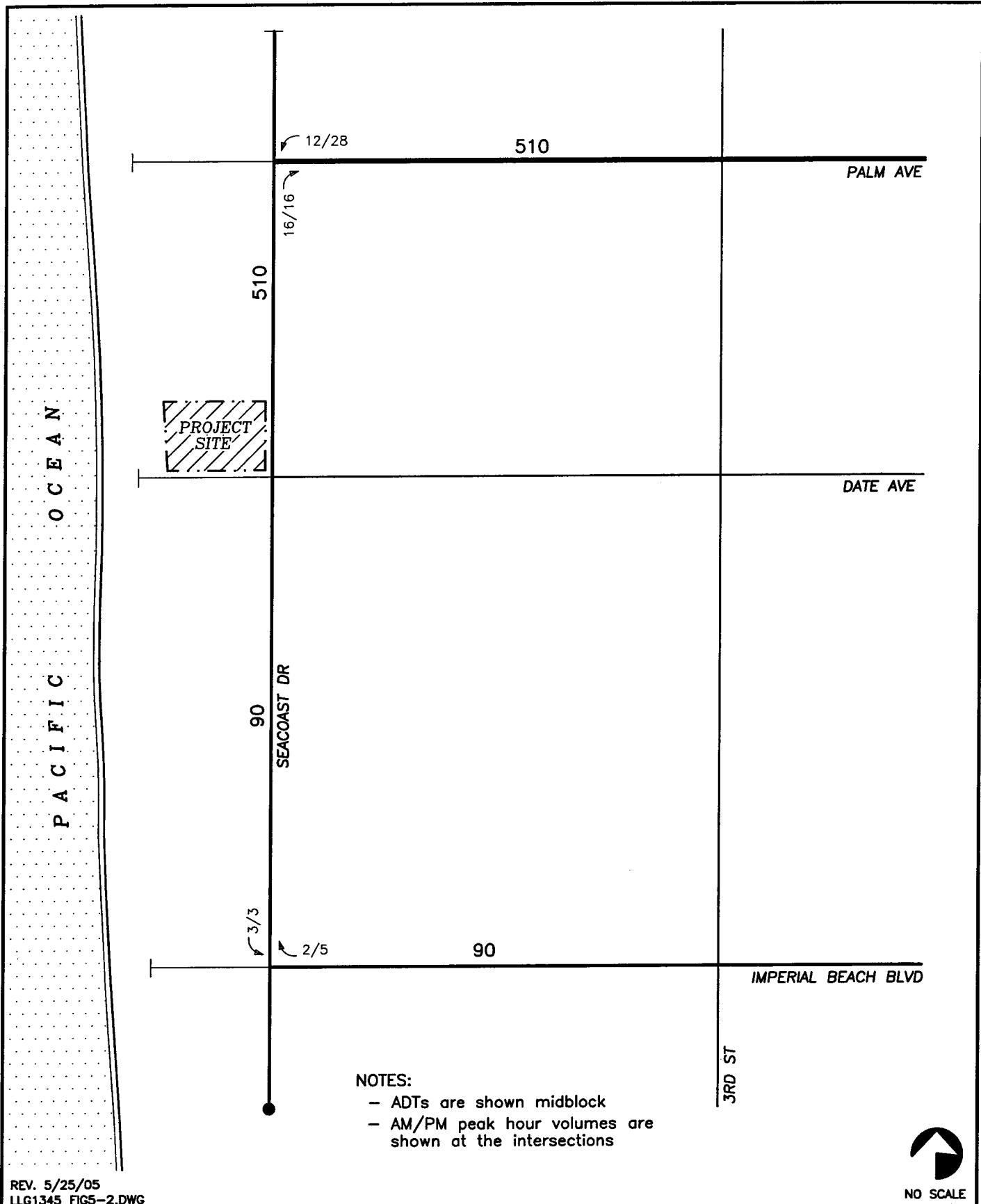
## 5.0 PROJECT DISTRIBUTION AND ASSIGNMENT

The project-generated traffic was distributed to the street system based on the site’s proximity to I-5 and SR-75, the Mexican border, and shopping/tourist attractions. **Figure 5–1** shows the estimated trip distribution percentages.

Once the traffic distribution was established, the project-generated traffic was assigned to the adjacent street system. **Figure 5–2** shows the assignment of the project traffic. **Figure 5–3** show the existing weekday + project traffic volumes. **Figure 5–4** shows the existing Saturday + project traffic volumes.



**Figure 5-1**  
**REGIONAL TRAFFIC DISTRIBUTION**



**Figure 5-2**

**PROJECT TRAFFIC VOLUMES  
AM/PM PEAK HOURS & ADTs**

SEACOAST INN

## Palm Avenue Eco Bicycle Cumulative Projects List

Description						AM			PM		
	Land Use	Units	Quantity	Rate	ADT	In	Out	Total	In	Out	Total
NAB and NRRF	Navel Facility	Personnel	100	2.5	250	30	20	50	20	30	50
2 Single Family Dwelling Units	Dwelling	Number	2	4.5	9	1	4	5	4	1	5
4 Single Family Dwelling Units	Dwelling	Number	4	5	20	2	8	10	8	2	10
Total					279	33	32	65	32	33	65

## **APPENDIX D**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING CONDITIONS**

Impact Analysis Report  
Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS	V/ C	Del/ LOS	V/ C	
# 1 Palm and 3rd	B 11.2	0.495	B 11.2	0.495	+ 0.000 V/C
# 2 Palm and 4th	B 11.5	0.000	B 11.5	0.000	+ 0.000 D/V
# 3 Palm and Corvina St.	B 13.1	0.000	B 13.1	0.000	+ 0.000 D/V
# 4 Palm and 5th	B 12.8	0.000	B 12.8	0.000	+ 0.000 D/V
# 5 Palm and Rainbow Dr.	C 21.1	0.000	C 21.1	0.000	+ 0.000 D/V
# 6 Palm and Carolina St.	C 20.5	0.000	C 20.5	0.000	+ 0.000 D/V
# 7 Palm and 7th	B 18.9	0.374	B 18.9	0.374	+ 0.000 D/V

Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

---

Intersection #1 Palm and 3rd

---

Cycle (sec): 100 Critical Vol./Cap.(X): 0.495  
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 11.2  
Optimal Cycle: 0 Level Of Service: B

---

Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

---

Control: Stop Sign Stop Sign Stop Sign Stop Sign  
Rights: Include Include Include Include

---

Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5  
Lanes: 0 0 1! 0 0 0 0 1! 0 0 1 0 0 1 0 1 0 1 1 0

---

Volume Module:

Base Vol:	15	62	90	59	34	23	35	279	8	29	224	69
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	62	90	59	34	23	35	279	8	29	224	69
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	15	62	90	59	34	23	35	279	8	29	224	69
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	16	65	95	62	36	24	37	294	8	31	236	73
Reduc Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	65	95	62	36	24	37	294	8	31	236	73
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	16	65	95	62	36	24	37	294	8	31	236	73

---

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.09	0.37	0.54	0.51	0.29	0.20	1.00	0.97	0.03	1.00	1.53	0.47
Final Sat.:	55	226	328	286	165	112	559	593	17	554	940	300

---

Capacity Analysis Module:

Vol/Sat:	0.29	0.29	0.22	0.22	0.22	0.07	0.50	0.50	0.06	0.25	0.24
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****

---

Delay/Veh: 10.4 10.4 10.4 10.3 10.3 10.3 9.4 13.5 13.5 9.3 10.1 9.7  
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
AdjDel/Veh: 10.4 10.4 10.4 10.3 10.3 10.3 9.4 13.5 13.5 9.3 10.1 9.7  
LOS by Move: B B B B B A B B A B A  
ApproachDel: 10.4 10.3 13.1 10.0  
Delay Adj: 1.00 1.00 1.00 1.00  
ApprAdjDel: 10.4 10.3 13.1 10.0  
LOS by Appr: B B B A  
AllWayAvgQ: 0.3 0.3 0.3 0.2 0.2 0.2 0.1 0.9 0.9 0.1 0.3 0.3

---

Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #2 Palm and 4th  
 \*\*\*\*  
 Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[ 11.5]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 5 0 91 0 0 0 0 442 6 47 311 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 5 0 91 0 0 0 0 442 6 47 311 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 5 0 91 0 0 0 0 442 6 47 311 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 5 0 96 0 0 0 0 465 6 49 327 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 5 0 96 0 0 0 0 465 6 49 327 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 775 xxxx 280 xxxx xxxx xxxx xxxx xxxx 506 xxxx xxxx  
 Potent Cap.: 339 xxxx 723 xxxx xxxx xxxx xxxx xxxx 1069 xxxx xxxx  
 Move Cap.: 315 xxxx 697 xxxx xxxx xxxx xxxx xxxx 1039 xxxx xxxx  
 Volume/Cap: 0.02 xxxx 0.14 xxxx xxxx xxxx xxxx 0.05 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.6 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 656 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedCap:xxxxxx 0.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 11.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 11.5 xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B[ 13.1]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 0 14 0 9 9 540 0 0 349 8  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 0 14 0 9 9 540 0 0 349 8  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 0 14 0 9 9 540 0 0 349 8  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 0 15 0 9 9 568 0 0 367 8  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 0 15 0 9 9 568 0 0 367 8  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx xxxx 695 xxxx 208 386 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx xxxx 381 xxxx 804 1184 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx xxxx 372 xxxx 791 1174 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx xxxx 0.04 xxxx 0.01 0.01 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx 0.0 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.1 xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 469 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 13.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxx 13.1 xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #4 Palm and 5th  
 \*\*\*\*  
 Average Delay (sec/veh): 2.4 Worst Case Level Of Service: B[ 12.8]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 7 0 118 0 0 0 0 559 7 123 316 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 7 0 118 0 0 0 0 559 7 123 316 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 7 0 118 0 0 0 0 559 7 123 316 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 7 0 124 0 0 0 0 588 7 129 333 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 7 0 124 0 0 0 0 588 7 129 333 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1037 xxxx 318 xxxx xxxx xxxx xxxx xxxx 606 xxxx xxxx  
 Potent Cap.: 230 xxxx 684 xxxx xxxx xxxx xxxx xxxx 982 xxxx xxxx  
 Move Cap.: 203 xxxx 672 xxxx xxxx xxxx xxxx xxxx 974 xxxx xxxx  
 Volume/Cap: 0.04 xxxx 0.18 xxxx xxxx xxxx xxxx xxxx 0.13 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.5 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.3 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 595 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.8 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 12.8 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 12.8 xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #5 Palm and Rainbow Dr.  
 \*\*\*\*  
 Average Delay (sec/veh): 2.9 Worst Case Level Of Service: C[ 21.1]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 23 0 46 234 456 0 0 396 121  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 23 0 46 234 456 0 0 396 121  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 23 0 46 234 456 0 0 396 121  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 24 0 48 246 480 0 0 417 127  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 24 0 48 246 480 0 0 417 127  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1233 xxxx 292 554 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 172 xxxx 710 1026 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 137 xxxx 699 1018 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx xxxx 0.18 xxxx 0.07 0.24 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.9 xxxx xxxx xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.7 xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 296 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.9 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 21.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxx 21.1 xxxx xxxx  
 ApproachLOS: C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #6 Palm and Carolina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 3.1 Worst Case Level Of Service: C[ 20.5]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 98 0 49 0 0 0 0 458 14 35 408 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 98 0 49 0 0 0 0 458 14 35 408 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 98 0 49 0 0 0 0 458 14 35 408 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 103 0 52 0 0 0 0 482 15 37 429 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 103 0 52 0 0 0 0 482 15 37 429 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 798 xxxx 280 xxxx xxxx xxxx xxxx xxxx 507 xxxx xxxx  
 Potent Cap.: 328 xxxx 723 xxxx xxxx xxxx xxxx xxxx 1068 xxxx xxxx  
 Move Cap.: 314 xxxx 704 xxxx xxxx xxxx xxxx xxxx 1059 xxxx xxxx  
 Volume/Cap: 0.33 xxxx 0.07 xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.5 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 385 xxxx  
 SharedQueue:xxxxx 1.9 xxxx  
 Shrd ConDel:xxxxx 20.5 xxxx  
 Shared LOS: \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 20.5 xxxx xxxx xxxx xxxx xxxx  
 ApproachLOS: C \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #7 Palm and 7th  
 \*\*\*\*  
 Cycle (sec): 60 Critical Vol./Cap.(X): 0.374  
 Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 18.9  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5  
 Lanes: 0 0 1! 0 0 0 1 0 0 1 1 0 1 0 1 1 0 1 0 1 1 0  
 Volume Module:  
 Base Vol: 48 34 84 4 10 26 19 453 15 41 385 3  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 48 34 84 4 10 26 19 453 15 41 385 3  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 48 34 84 4 10 26 19 453 15 41 385 3  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 51 36 88 4 11 27 20 477 16 43 405 3  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 51 36 88 4 11 27 20 477 16 43 405 3  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Final Vol.: 51 36 88 4 11 27 20 477 16 43 405 3  
 Saturation Flow Module:  
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900  
 Adjustment: 0.90 0.90 0.90 0.97 0.97 0.83 0.93 0.93 0.93 0.93 0.93 0.93  
 Lanes: 0.29 0.20 0.51 0.29 0.71 1.00 1.00 1.94 0.06 1.00 1.98 0.02  
 Final Sat.: 495 350 866 525 1311 1583 1769 3407 113 1769 3507 27  
 Capacity Analysis Module:  
 Vol/Sat: 0.10 0.10 0.10 0.01 0.01 0.02 0.01 0.14 0.14 0.02 0.12 0.12  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 Green/Cycle: 0.24 0.24 0.24 0.08 0.08 0.08 0.17 0.33 0.33 0.08 0.24 0.24  
 Volume/Cap: 0.43 0.43 0.43 0.10 0.10 0.21 0.07 0.43 0.43 0.29 0.48 0.48  
 Uniform Del: 19.3 19.3 19.3 25.4 25.4 25.7 20.8 15.8 15.8 25.8 19.7 19.7  
 Incremnt Del: 0.7 0.7 0.7 0.3 0.3 0.8 0.1 0.3 0.3 1.1 0.4 0.4  
 InitQueueDel: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Delay/Veh: 20.1 20.1 20.1 25.7 25.7 26.4 20.9 16.0 16.0 26.9 20.1 20.1  
 User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 20.1 20.1 20.1 25.7 25.7 26.4 20.9 16.0 16.0 26.9 20.1 20.1  
 LOS by Move: C C C C C C C B B C C C C  
 HCM2kAvgQ: 3 3 3 0 0 1 0 4 4 1 4 4  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

Impact Analysis Report  
Level Of Service

Intersection	Base Del/ LOS Veh	Future Del/ LOS Veh	Change in
# 1 Palm and 3rd	B 11.1 0.520	B 11.1 0.520	+ 0.000 V/C
# 2 Palm and 4th	B 12.7 0.000	B 12.7 0.000	+ 0.000 D/V
# 3 Palm and Corvina St.	B 13.2 0.000	B 13.2 0.000	+ 0.000 D/V
# 4 Palm and 5th	B 10.6 0.000	B 10.6 0.000	+ 0.000 D/V
# 5 Palm and Rainbow Dr.	C 22.0 0.000	C 22.0 0.000	+ 0.000 D/V
# 6 Palm and Carolina St.	B 14.8 0.000	B 14.8 0.000	+ 0.000 D/V
# 7 Palm and 7th	B 18.1 0.326	B 18.1 0.326	+ 0.000 D/V

Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

\*\*\*\*\*
Intersection #1 Palm and 3rd
\*\*\*\*\*
Cycle (sec): 100 Critical Vol./Cap.(X): 0.520
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 11.1
Optimal Cycle: 0 Level Of Service: B
\*\*\*\*\*
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
-----
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5
Lanes: 0 0 1! 0 0 0 0 1! 0 0 1 0 0 1 0 1 0 1 1 0
-----
Volume Module:
Base Vol: 13 14 64 21 13 22 15 303 17 117 371 14
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 13 14 64 21 13 22 15 303 17 117 371 14
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 13 14 64 21 13 22 15 303 17 117 371 14
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume: 14 15 67 22 14 23 16 319 18 123 391 15
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 14 15 67 22 14 23 16 319 18 123 391 15
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 14 15 67 22 14 23 16 319 18 123 391 15
-----
Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.14 0.15 0.71 0.38 0.23 0.39 1.00 0.95 0.05 1.00 1.93 0.07
Final Sat.: 85 92 421 211 131 221 585 614 34 611 1294 49
-----
Capacity Analysis Module:
Vol/Sat: 0.16 0.16 0.16 0.10 0.10 0.10 0.03 0.52 0.52 0.20 0.30 0.30
Crit Moves: \*\*\*\* \* \* \* \* \* \* \* \* \* \* \* \*
Delay/Veh: 9.4 9.4 9.4 9.4 9.4 9.4 8.8 13.7 13.7 9.9 10.2 10.1
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 9.4 9.4 9.4 9.4 9.4 9.4 8.8 13.7 13.7 9.9 10.2 10.1
LOS by Move: A A A A A A A B B A B B
ApproachDel: 9.4 9.4 9.4 9.4 9.4 9.4 13.5 10.1
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
ApprAdjDel: 9.4 9.4 9.4 9.4 9.4 9.4 13.5 10.1
LOS by Appr: A A A B B B
AllWayAvgQ: 0.2 0.2 0.2 0.1 0.1 0.1 0.0 1.0 1.0 0.2 0.4 0.4
\*\*\*\*\*
Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #2 Palm and 4th  
 \*\*\*\*  
 Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[ 12.7]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 11 0 48 0 0 0 0 387 10 92 519 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 11 0 48 0 0 0 0 387 10 92 519 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 11 0 48 0 0 0 0 387 10 92 519 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 12 0 51 0 0 0 0 407 11 97 546 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 12 0 51 0 0 0 0 407 11 97 546 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 923 xxxx 253 xxxx xxxx xxxx xxxx xxxx 452 xxxx xxxx  
 Potent Cap: 272 xxxx 753 xxxx xxxx xxxx xxxx xxxx 1119 xxxx xxxx  
 Move Cap.: 245 xxxx 725 xxxx xxxx xxxx xxxx xxxx 1088 xxxx xxxx  
 Volume/Cap: 0.05 xxxx 0.07 xxxx xxxx xxxx xxxx 0.09 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.3 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.6 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 531 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.4 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 12.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 12.7 xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[ 13.2]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 4 0 10 12 408 0 0 615 22  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 4 0 10 12 408 0 0 615 22  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 4 0 10 12 408 0 0 615 22  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 4 0 11 13 429 0 0 647 23  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 4 0 11 13 429 0 0 647 23  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 919 xxxx 355 681 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap: xxxx xxxx xxxx 274 xxxx 647 921 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 267 xxxx 636 914 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx 0.02 xxxx 0.02 0.01 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.0 xxxx xxxx xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.0 xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx xxxx xxxx xxxx 456 xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 13.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxx 13.2 xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #4 Palm and 5th  
 \*\*\*\*  
 Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B[ 10.6]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 1 0 14 0 0 0 0 456 2 27 599 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 1 0 14 0 0 0 0 456 2 27 599 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 1 0 14 0 0 0 0 456 2 27 599 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 1 0 15 0 0 0 0 480 2 28 631 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 1 0 15 0 0 0 0 480 2 28 631 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 873 xxxx 261 xxxx xxxx xxxx xxxx xxxx 492 xxxx xxxx  
 Potent Cap.: 293 xxxx 744 xxxx xxxx xxxx xxxx 1082 xxxx xxxx  
 Move Cap.: 283 xxxx 731 xxxx xxxx xxxx xxxx 1073 xxxx xxxx  
 Volume/Cap: 0.00 xxxx 0.02 xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.4 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 661 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared Queue:xxxxxx 0.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 10.6 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 10.6 xxxx xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #5 Palm and Rainbow Dr.  
 \*\*\*\*  
 Average Delay (sec/veh): 6.4 Worst Case Level Of Service: C[ 22.0]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 85 0 223 85 355 0 0 372 54  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 85 0 223 85 355 0 0 372 54  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 85 0 223 85 355 0 0 372 54  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 89 0 235 89 374 0 0 392 57  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 89 0 235 89 374 0 0 392 57  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 806 xxxx 244 458 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 324 xxxx 762 1113 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 299 xxxx 750 1104 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx xxxx 0.30 xxxx 0.31 0.08 xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.3 xxxx xxxx xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.5 xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx  
 Shared Queue:xxxxxx 529 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 22.0 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxx xxxx 22.0 xxxx xxxx  
 ApproachLOS: \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #6 Palm and Carolina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 1.0 Worst Case Level Of Service: B[ 14.8]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 29 0 27 0 0 0 0 0 461 52 33 473 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 29 0 27 0 0 0 0 0 461 52 33 473 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 808 xxxx 288 xxxx xxxx xxxx xxxx xxxx 523 xxxx xxxx  
 Potent Cap.: 323 xxxx 714 xxxx xxxx xxxx xxxx xxxx 1054 xxxx xxxx  
 Move Cap.: 310 xxxx 695 xxxx xxxx xxxx xxxx xxxx 1045 xxxx xxxx  
 Volume/Cap: 0.10 xxxx 0.04 xxxx xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.6 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 422 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 14.8 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 14.8 xxxx xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #7 Palm and 7th  
 \*\*\*\*  
 Cycle (sec): 60 Critical Vol./Cap.(X): 0.326  
 Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 18.1  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5  
 Lanes: 0 0 1! 0 0 0 1 0 0 1 1 0 1 0 1 1 0 1 0 1 1 0  
 Volume Module:  
 Base Vol: 35 25 42 24 35 43 28 379 34 59 410 12  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 35 25 42 24 35 43 28 379 34 59 410 12  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 35 25 42 24 35 43 28 379 34 59 410 12  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 37 26 44 25 37 45 29 399 36 62 432 13  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 37 26 44 25 37 45 29 399 36 62 432 13  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Final Vol.: 37 26 44 25 37 45 29 399 36 62 432 13  
 Saturation Flow Module:  
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900  
 Adjustment: 0.91 0.91 0.91 0.96 0.96 0.83 0.93 0.92 0.92 0.93 0.93 0.93 0.93  
 Lanes: 0.34 0.25 0.41 0.41 0.59 1.00 1.00 1.84 0.16 1.00 1.94 0.06  
 Final Sat.: 593 423 711 742 1082 1583 1769 3208 288 1769 3423 100  
 Capacity Analysis Module:  
 Vol/Sat: 0.06 0.06 0.06 0.03 0.03 0.03 0.02 0.12 0.12 0.04 0.13 0.13  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\*  
 Green/Cycle: 0.18 0.18 0.18 0.10 0.10 0.10 0.08 0.27 0.27 0.18 0.37 0.37  
 Volume/Cap: 0.34 0.34 0.34 0.34 0.34 0.34 0.29 0.20 0.46 0.46 0.19 0.34 0.34  
 Uniform Del: 21.4 21.4 21.4 25.2 25.2 25.0 25.6 18.2 18.2 20.8 13.7 13.7  
 Incremmt Del: 0.7 0.7 0.7 1.1 1.1 1.0 0.7 0.4 0.4 0.3 0.2 0.2  
 InitQueueDel: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Delay/Veh: 22.1 22.1 22.1 26.3 26.3 26.1 26.3 18.6 18.6 21.1 13.8 13.8  
 User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 22.1 22.1 22.1 26.3 26.3 26.1 26.3 18.6 18.6 21.1 13.8 13.8  
 LOS by Move: C C C C C C C B B C B B  
 HCM2kAvgQ: 2 2 2 1 1 1 1 4 4 1 3 3  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

Impact Analysis Report  
Level Of Service

Intersection	Base		Future		Change in
	Del/ LOS Veh	V/ C	Del/ LOS Veh	V/ C	
# 1 Palm and 3rd	B 12.3	0.497	B 12.3	0.497	+ 0.000 V/C
# 2 Palm and 4th	B 13.3	0.000	B 13.3	0.000	+ 0.000 D/V
# 3 Palm and Corvina St.	C 15.9	0.000	C 15.9	0.000	+ 0.000 D/V
# 4 Palm and 5th	C 16.4	0.000	C 16.4	0.000	+ 0.000 D/V
# 5 Palm and Rainbow Dr.	C 21.3	0.000	C 21.3	0.000	+ 0.000 D/V
# 6 Palm and Carolina St.	C 20.0	0.000	C 20.0	0.000	+ 0.000 D/V
# 7 Palm and 7th	B 19.4	0.546	B 19.4	0.546	+ 0.000 D/V

Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

\*\*\*\*\*
Intersection #1 Palm and 3rd
\*\*\*\*\*
Cycle (sec): 100 Critical Vol./Cap.(X): 0.497
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 12.3
Optimal Cycle: 0 Level Of Service: B
\*\*\*\*\*
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
-----
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5
Lanes: 0 0 1! 0 0 0 0 1! 0 0 1 0 0 1 0 1 0 0 1 0
-----
Volume Module:
Base Vol: 15 62 90 59 34 23 35 279 8 29 224 69
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 15 62 90 59 34 23 35 279 8 29 224 69
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 15 62 90 59 34 23 35 279 8 29 224 69
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume: 16 65 95 62 36 24 37 294 8 31 236 73
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 16 65 95 62 36 24 37 294 8 31 236 73
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 16 65 95 62 36 24 37 294 8 31 236 73
-----
Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.09 0.37 0.54 0.51 0.29 0.20 1.00 0.97 0.03 1.00 0.76 0.24
Final Sat.: 53 219 318 278 160 108 556 591 17 555 475 146
-----
Capacity Analysis Module:
Vol/Sat: 0.30 0.30 0.30 0.22 0.22 0.22 0.07 0.50 0.50 0.06 0.50 0.50
Crit Moves: \*\*\*\* \* \* \* \* \* \* \* \*
Delay/Veh: 10.6 10.6 10.6 10.4 10.4 10.4 9.4 13.6 13.6 9.3 13.3 13.3
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 10.6 10.6 10.6 10.4 10.4 10.4 9.4 13.6 13.6 9.3 13.3 13.3
LOS by Move: B B B B B B A B B A B B
ApproachDel: 10.6 10.4 10.4 13.2 13.0
Delay Adj: 1.00 1.00 1.00 1.00
ApprAdjDel: 10.6 10.4 10.4 13.2 13.0
LOS by Appr: B B B B B B
AllWayAvgQ: 0.3 0.3 0.3 0.2 0.2 0.2 0.1 0.9 0.9 0.1 0.9 0.9
\*\*\*\*\*
Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #2 Palm and 4th  
 \*\*\*\*  
 Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B[ 13.3]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 0 1 0 0 1 0 0  
 Volume Module:  
 Base Vol: 5 0 91 0 0 0 0 0 442 6 47 311 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 5 0 91 0 0 0 0 0 442 6 47 311 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 5 0 91 0 0 0 0 0 442 6 47 311 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 5 0 96 0 0 0 0 0 465 6 49 327 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 5 0 96 0 0 0 0 0 465 6 49 327 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 927 xxxx 500 xxxx xxxx xxxx xxxx xxxx 494 xxxx xxxx  
 Potent Cap.: 300 xxxx 575 xxxx xxxx xxxx xxxx 1080 xxxx xxxx  
 Move Cap.: 282 xxxx 559 xxxx xxxx xxxx xxxx 1061 xxxx xxxx  
 Volume/Cap: 0.02 xxxx 0.17 xxxx xxxx xxxx xxxx 0.05 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.6 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 532 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared Queue:xxxxxx 0.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 13.3 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 13.3 xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.5 Worst Case Level Of Service: C[ 15.9]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 0 0 1! 0 0 1 0 0 0 0 1 0  
 Volume Module:  
 Base Vol: 0 0 0 14 0 9 9 540 0 0 349 8  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 14 0 9 9 540 0 0 349 8  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 14 0 9 9 540 0 0 349 8  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 15 0 9 9 568 0 0 367 8  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 15 0 9 9 568 0 0 367 8  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.4 xxxx 6.2 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 979 xxxx 392 386 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 280 xxxx 661 1184 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 273 xxxx 651 1174 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx 0.05 xxxx 0.01 0.01 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx 0.0 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.1 xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 354 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared Queue:xxxxxx 0.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 15.9 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxx 15.9 xxxx xxxx  
 ApproachLOS: C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #4 Palm and 5th  
 \*\*\*\*  
 Average Delay (sec/veh): 2.8 Worst Case Level Of Service: C[ 16.4]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 0 1 0 1 0 0  
 Volume Module:  
 Base Vol: 7 0 118 0 0 0 0 559 7 123 316 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 7 0 118 0 0 0 0 559 7 123 316 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 7 0 118 0 0 0 0 559 7 123 316 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 7 0 124 0 0 0 0 588 7 129 333 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 7 0 124 0 0 0 0 588 7 129 333 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1204 xxxx 612 xxxx xxxx xxxx xxxx xxxx xxxx 606 xxxx xxxx  
 Potent Cap.: 205 xxxx 497 xxxx xxxx xxxx xxxx xxxx xxxx 982 xxxx xxxx  
 Move Cap.: 181 xxxx 488 xxxx xxxx xxxx xxxx xxxx xxxx 974 xxxx xxxx  
 Volume/Cap: 0.04 xxxx 0.25 xxxx xxxx xxxx xxxx xxxx 0.13 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.5 xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.3 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 446 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxx 1.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx 16.4 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 16.4 xxxxxx xxxxxx xxxxxx  
 ApproachLOS: C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #5 Palm and Rainbow Dr.  
 \*\*\*\*  
 Average Delay (sec/veh): 2.9 Worst Case Level Of Service: C[ 21.3]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 1 0 0 0 1 1 0 1 0 0 0  
 Volume Module:  
 Base Vol: 0 0 0 23 0 46 234 456 0 0 396 121  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 23 0 46 234 456 0 0 396 121  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 23 0 46 234 456 0 0 396 121  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 24 0 48 246 480 0 0 417 127  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 24 0 48 246 480 0 0 417 127  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.4 xxxx 6.2 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1409 xxxx 437 554 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 154 xxxx 624 1026 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 123 xxxx 614 1018 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx xxxx 0.20 xxxx 0.08 0.24 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx 0.7 xxxx 0.3 0.9 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx 41.2 xxxx 11.4 9.7 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* E \* B A \* \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx  
 SharedQueue:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxxxx 21.3 xxxxxx xxxxxx  
 ApproachLOS: C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #6 Palm and Carolina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 3.0 Worst Case Level Of Service: C[ 20.0]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 0 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 98 0 49 0 0 0 0 458 14 35 408 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 98 0 49 0 0 0 0 458 14 35 408 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 98 0 49 0 0 0 0 458 14 35 408 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 103 0 52 0 0 0 0 482 15 37 429 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 103 0 52 0 0 0 0 482 15 37 429 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 798 xxxx 509 xxxx xxxx xxxx xxxx xxxx 507 xxxx xxxx  
 Potent Cap.: 358 xxxx 568 xxxx xxxx xxxx xxxx xxxx 1068 xxxx xxxx  
 Move Cap.: 343 xxxx 558 xxxx xxxx xxxx xxxx xxxx 1059 xxxx xxxx  
 Volume/Cap: 0.30 xxxx 0.09 xxxx xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.5 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 393 xxxx  
 SharedQueue:xxxxx 1.8 xxxx  
 Shrd ConDel:xxxxx 20.0 xxxx  
 Shared LOS: \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 20.0 xxxx xxxx xxxx xxxx xxxx  
 ApproachLOS: C \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #7 Palm and 7th  
 \*\*\*\*  
 Cycle (sec): 60 Critical Vol./Cap.(X): 0.546  
 Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 19.4  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5  
 Lanes: 0 0 1! 0 0 0 1 0 0 1 0 0 1 0 0 1 0 1 1 0  
 Volume Module:  
 Base Vol: 48 34 84 4 10 26 19 453 15 41 385 3  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 48 34 84 4 10 26 19 453 15 41 385 3  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 48 34 84 4 10 26 19 453 15 41 385 3  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 51 36 88 4 11 27 20 477 16 43 405 3  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 51 36 88 4 11 27 20 477 16 43 405 3  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Final Vol.: 51 36 88 4 11 27 20 477 16 43 405 3  
 Saturation Flow Module:  
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900  
 Adjustment: 0.90 0.90 0.90 0.97 0.97 0.83 0.93 0.98 0.98 0.93 0.93 0.93  
 Lanes: 0.29 0.20 0.51 0.29 0.71 1.00 1.00 0.97 0.03 1.00 1.98 0.02  
 Final Sat.: 495 350 866 525 1311 1583 1769 1793 59 1769 3507 27  
 Capacity Analysis Module:  
 Vol/Sat: 0.10 0.10 0.10 0.01 0.01 0.02 0.01 0.27 0.27 0.02 0.12 0.12  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 Green/Cycle: 0.16 0.16 0.16 0.08 0.08 0.08 0.21 0.41 0.41 0.08 0.29 0.29  
 Volume/Cap: 0.65 0.65 0.65 0.10 0.10 0.21 0.05 0.65 0.65 0.29 0.40 0.40  
 Uniform Del: 23.7 23.7 23.7 25.4 25.4 25.7 19.1 14.3 14.3 25.8 17.3 17.3  
 IncremntDel: 5.5 5.5 5.5 0.3 0.3 0.8 0.1 2.0 2.0 1.1 0.3 0.3  
 InitQueueDel: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Delay/Veh: 29.2 29.2 29.2 25.7 25.7 26.4 19.2 16.2 16.2 26.9 17.5 17.5  
 User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 29.2 29.2 29.2 25.7 25.7 26.4 19.2 16.2 16.2 26.9 17.5 17.5  
 LOS by Move: C C C C C B B B C B B  
 HCM2kAvgQ: 4 4 4 0 0 1 0 8 8 1 4 4  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

**Impact Analysis Report  
Level Of Service**

Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh	Del/ LOS	V/ Veh	
# 1 Palm and 3rd	B 13.2	0.601	B 13.2	0.601	+ 0.000 V/C
# 2 Palm and 4th	B 14.8	0.000	B 14.8	0.000	+ 0.000 D/V
# 3 Palm and Corvina St.	C 15.9	0.000	C 15.9	0.000	+ 0.000 D/V
# 4 Palm and 5th	B 12.4	0.000	B 12.4	0.000	+ 0.000 D/V
# 5 Palm and Rainbow Dr.	C 17.2	0.000	C 17.2	0.000	+ 0.000 D/V
# 6 Palm and Carolina St.	B 15.0	0.000	B 15.0	0.000	+ 0.000 D/V
# 7 Palm and 7th	B 17.6	0.501	B 17.6	0.501	+ 0.000 D/V

**Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)**

```
*****
Intersection #1 Palm and 3rd
*****
Cycle (sec): 100 Critical Vol./Cap.(X): 0.601
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 13.2
Optimal Cycle: 0 Level Of Service: B
*****
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
-----|-----|-----|-----|-----|-----|-----|-----|
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5
Lanes: 0 0 1! 0 0 0 0 1! 0 0 1 0 0 1 0 0 1 0
-----|-----|-----|-----|-----|-----|-----|-----|
Volume Module:
Base Vol: 13 14 64 21 13 22 15 303 17 117 371 14
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 13 14 64 21 13 22 15 303 17 117 371 14
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 13 14 64 21 13 22 15 303 17 117 371 14
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume: 14 15 67 22 14 23 16 319 18 123 391 15
Reduc Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 14 15 67 22 14 23 16 319 18 123 391 15
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 14 15 67 22 14 23 16 319 18 123 391 15
-----|-----|-----|-----|-----|-----|-----|-----|
Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.14 0.15 0.71 0.38 0.23 0.39 1.00 0.95 0.05 1.00 0.96 0.04
Final Sat.: 83 89 407 204 126 214 584 612 34 611 649 25
-----|-----|-----|-----|-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat: 0.17 0.17 0.17 0.11 0.11 0.11 0.03 0.52 0.52 0.20 0.60 0.60
Crit Moves: **** * * * * * * * * * * * *
Delay/Veh: 9.6 9.6 9.6 9.5 9.5 9.5 8.8 13.7 13.7 9.9 15.3 15.3
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 9.6 9.6 9.6 9.5 9.5 9.5 8.8 13.7 13.7 9.9 15.3 15.3
LOS by Move: A A A A A A A B B A C C
ApproachDel: 9.6 9.5 9.5 13.5 14.1
Delay Adj: 1.00 1.00 1.00 1.00
ApprAdjDel: 9.6 9.5 13.5 14.1
LOS by Appr: A A B B B
AllWayAvgQ: 0.2 0.2 0.2 0.1 0.1 0.1 0.0 1.0 1.0 0.2 1.4 1.4
*****
```

Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #2 Palm and 4th  
 \*\*\*\*  
 Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[ 14.8]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 0 1 0 0 1 0 0  
 Volume Module:  
 Base Vol: 11 0 48 0 0 0 0 387 10 92 519 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 11 0 48 0 0 0 0 387 10 92 519 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 11 0 48 0 0 0 0 387 10 92 519 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 12 0 51 0 0 0 0 407 11 97 546 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 12 0 51 0 0 0 0 407 11 97 546 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1185 xxxx 445 xxxx xxxx xxxx xxxx xxxx xxxx 440 xxxx xxxx  
 Potent Cap.: 211 xxxx 618 xxxx xxxx xxxx xxxx xxxx 1131 xxxx xxxx  
 Move Cap.: 192 xxxx 601 xxxx xxxx xxxx xxxx xxxx 1110 xxxx xxxx  
 Volume/Cap: 0.06 xxxx 0.08 xxxx xxxx xxxx xxxx xxxx 0.09 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.3 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.6 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 430 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 14.8 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 14.8 xxxx xxxx xxxx xxxx xxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.3 Worst Case Level Of Service: C[ 15.9]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 0 0 1! 0 0 1 0 0 0 0 1 0  
 Volume Module:  
 Base Vol: 0 0 0 4 0 10 12 408 0 0 615 22  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 0 0 0 4 0 10 12 408 0 0 615 22  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 4 0 10 12 408 0 0 615 22  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 4 0 11 13 429 0 0 647 23  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 4 0 11 13 429 0 0 647 23  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.4 xxxx 6.2 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1134 xxxx 679 681 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 226 xxxx 455 921 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 220 xxxx 448 914 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx 0.02 xxxx 0.02 0.01 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.0 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.0 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* A \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx  
 SharedQueue:xxxxxx 0.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 15.9 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* C \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxx 15.9 xxxx xxxx  
 ApproachLOS: C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Palm and 5th

Average Delay (sec/veh): 0.4      Worst Case Level Of Service: B [ 12.4 ]

Approach:	North Bound			South Bound			East Bound			West Bound					
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled					
Rights:	Include			Include			Include			Include					
Lanes:	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0

Volume Module:

Base Vol:	1	0	14	0	0	0	0	456	2	27	599	0	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Base:	1	0	14	0	0	0	0	456	2	27	599	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	0	14	0	0	0	0	456	2	27	599	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	1	0	15	0	0	0	0	480	2	28	631	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	0	15	0	0	0	0	480	2	28	631	0	0	0	0

Critical Gap Module:

Critical Gp:	6.4	xxxxx	6.2	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxx	4.1	xxxx	xxxxx	xxxx	xxxx	xxxx
FollowUpTim:	3.5	xxxxx	3.3	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxx	2.2	xxxx	xxxxx	xxxx	xxxx	xxxx

Capacity Module:

Cnflct Vol:	1188	xxxxx	501	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	492	xxxx	xxxxxx	xxxx	xxxx	xxxx
Potent Cap.:	210	xxxxx	574	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	1082	xxxx	xxxxxx	xxxx	xxxx	xxxx
Move Cap.:	202	xxxxx	565	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	1073	xxxx	xxxxxx	xxxx	xxxx	xxxx
Volume/Cap.:	0.01	xxxxx	0.03	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	0.03	xxxxx	xxxxxx	xxxx	xxxx	xxxx

Level Of Service Module:

2Way95thQ:	xxxxx	xxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	0.1	xxxx	xxxxxx	xxxx	xxxx	xxxx
Control Del:	xxxxxx	xxxxx	xxxxxx	8.4	xxxx	xxxxxx	xxxx	xxxx	xxxx						
LOS By Move:	*	*	*	*	*	*	*	*	*	A	*	*	*	*	*

Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxxx	504	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx	xxxx	xxxxxx	xxxx	xxxx
SharedQueue:	xxxxx	0.1	xxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx	xxxx	xxxxxx	xxxx	xxxx
Shrd ConDel:	xxxxxx	12.4	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx	xxxx	xxxxxx	xxxx	xxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.4		xxxxxxx			xxxxxxx		xxxxxxx			xxxxxx		xxxxxx		
ApproachLOS:	B		*		*		*		*		*		*		*

Note: Queue reported is the number of cars per lane.

Note: Queue reported is the number of cars per lane

Level Of Service Computation Report  
2000 HCM Unsignedized Method (Future Volume Alternative)

Intersection #5 Palm and Rainbow Dr.

Average Delay (sec/veh): 5.1      Worst Case Level Of Service: C [ 17.2 ]

Approach:	North Bound			South Bound			East Bound			West Bound					
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:															
	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled					
Rights:	Include			Include			Include			Include					
Lanes:	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0

Volume Module:

Base Vol.:	0	0	0	85	0	223	85	355	0	0	372	54
Growth Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	85	0	223	85	355	0	0	372	54
Added Vol.:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol.:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut.:	0	0	0	85	0	223	85	355	0	0	372	54
User Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj.:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	89	0	235	89	374	0	0	392	57
Reduc Vol.:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	89	0	235	89	374	0	0	392	57

Critical Gap Module:

Critical Gp:	xxxxxx	xxxx	xxxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
FollowUpTim:	xxxxxx	xxxx	xxxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx

Capacity Module:

Cnflct Cap. Vol.:	xxxxxx	xxxxxx	964	xxxxx	412	458	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Potent Cap.:	xxxxxx	xxxxxx	285	xxxxxx	645	1113	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Move Cap.:	xxxxxx	xxxxxx	263	xxxxxx	634	1104	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Volume/Cap.:	xxxxxx	xxxxxx	0.34	xxxxxx	0.37	0.08	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx

Level Of Service Module:

2Way95thQ:	xxxxxx	xxxxxx	1.4	xxxxx	1.7	0.3	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx			
Control Del.:	xxxxxx	xxxxxx	25.5	xxxxxx	14.0	8.5	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx			
LOS by Move:	*	*	*	D	*	B	A	*	*	*	*	*			
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxxxx	xxxx	xxxxxx												
SharedQueue:	xxxxxx														
Shrd ConDel:	xxxxxx														
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*			
ApproachDel:	xxxxxx				17.2		xxxxxx			xxxxxx					
ApproachLOS:	*				C		*			*					

Note: Queue reported is the number of cars per lane.

Note: Queue reported is the number of cars per lane

-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #6 Palm and Carolina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[ 15.0]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 0 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 29 0 27 0 0 0 0 0 461 52 33 473 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 29 0 27 0 0 0 0 0 461 52 33 473 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 808 xxxx 507 xxxx xxxx xxxx xxxx xxxx 523 xxxx xxxx  
 Potent Cap.: 353 xxxx 570 xxxx xxxx xxxx xxxx xxxx 1054 xxxx xxxx  
 Move Cap.: 339 xxxx 560 xxxx xxxx xxxx xxxx xxxx 1045 xxxx xxxx  
 Volume/Cap: 0.09 xxxx 0.05 xxxx xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 8.6 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* A \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 418 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxxx 0.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxxx 15.0 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 15.0 xxxxxx xxxxxx xxxxxx  
 ApproachLOS: B \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

-----  
 Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #7 Palm and 7th  
 \*\*\*\*  
 Cycle (sec): 60 Critical Vol./Cap.(X): 0.501  
 Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 17.6  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5  
 Lanes: 0 0 1! 0 0 0 1 0 0 1 0 0 1 0 0 1 0 1 1 0  
 Volume Module:  
 Base Vol: 35 25 42 24 35 43 28 379 34 59 410 12  
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Initial Bse: 35 25 42 24 35 43 28 379 34 59 410 12  
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 35 25 42 24 35 43 28 379 34 59 410 12  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 37 26 44 25 37 45 29 399 36 62 432 13  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 37 26 44 25 37 45 29 399 36 62 432 13  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Final Vol.: 37 26 44 25 37 45 29 399 36 62 432 13  
 Saturation Flow Module:  
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900  
 Adjustment: 0.91 0.91 0.91 0.96 0.96 0.83 0.93 0.97 0.97 0.93 0.93 0.93 0.93  
 Lanes: 0.34 0.25 0.41 0.41 0.59 1.00 1.00 0.92 0.08 1.00 1.94 0.06  
 Final Sat.: 593 423 711 742 1082 1583 1769 1688 151 1769 3423 100  
 Capacity Analysis Module:  
 Vol/Sat: 0.06 0.06 0.06 0.03 0.03 0.03 0.02 0.24 0.24 0.04 0.13 0.13  
 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\* \*\*\*\*  
 Green/Cycle: 0.12 0.12 0.12 0.08 0.08 0.08 0.21 0.45 0.45 0.08 0.32 0.32  
 Volume/Cap: 0.53 0.53 0.53 0.41 0.41 0.34 0.08 0.53 0.53 0.42 0.39 0.39  
 Uniform Del: 24.9 24.9 24.9 26.1 26.1 26.0 19.0 11.9 11.9 26.1 15.9 15.9  
 Incremmt Del: 2.6 2.6 2.6 1.8 1.8 1.6 0.1 0.6 0.6 1.9 0.2 0.2  
 InitQueueDel: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Delay/Veh: 27.4 27.4 27.4 27.9 27.9 27.5 19.0 12.6 12.6 28.1 16.1 16.1  
 User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 27.4 27.4 27.4 27.9 27.9 27.5 19.0 12.6 12.6 28.1 16.1 16.1  
 LOS by Move: C C C C C B B B C B B  
 HCM2kAvgQ: 3 3 3 2 2 1 0 6 6 2 4 4  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

## **APPENDIX E**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS HORIZON YEAR CONDITIONS**

LT AM

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-----  
Scenario Report

Scenario: LT AM  
Command: None  
Volume: LT AM  
Geometry: Existing  
Impact Fee: None  
Trip Generation: AM  
Trip Distribution: AM  
Paths: None  
Routes: Default Routes  
Configuration: Default Configuration

LT AM

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-----  
Impact Analysis Report  
Level Of Service

Intersection	Base Del/ V/ LOS Veh	Future Del/ V/ LOS Veh	Change in C
# 1 Palm and 3rd	B 13.7 0.645	C 15.2 0.711	+ 0.066 V/C
# 2 Palm and 4th	B 12.6 0.000	B 12.9 0.000	+ 0.311 D/V
# 3 Palm and Corvina St.	B 14.9 0.000	C 15.6 0.000	+ 0.724 D/V
# 4 Palm and 5th	B 14.4 0.000	B 14.9 0.000	+ 0.473 D/V
# 5 Palm and Rainbow Dr.	D 30.1 0.000	D 33.1 0.000	+ 3.020 D/V
# 6 Palm and Carolina St.	D 28.8 0.000	D 32.4 0.000	+ 3.538 D/V
# 7 Palm and 7th	B 18.4 0.426	B 18.3 0.439	-0.148 D/V

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Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

---

Intersection #1 Palm and 3rd

---

Cycle (sec):	100	Critical Vol./Cap.(X):	0.711		
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	15.2		
Optimal Cycle:	0	Level Of Service:	C		
Approach:	North Bound	South Bound	East Bound	West Bound	
Movement:	L - T - R	L - T - R	L - T - R	L - T - R	
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign	
Rights:	Include	Include	Include	Include	
Min. Green:	5 5 5	5 5 5	5 5 5	5 5 5	
Lanes:	0 0 1! 0 0	0 0 1! 0 0	1 0 0 1 0	1 0 1 1	
Volume Module:					
Base Vol.:	15 62	90 59	34 23	35 279	8 29 224
Growth Adj:	1.23 1.40	1.23 1.05	1.05 1.05	1.05 1.23	1.23 1.23 1.23 1.00
Initial Bse:	18 87	111 62	36 24	37 343	10 36 276
Added Vol.:	0 0	0 0	0 0	0 32	0 0 33
PasserByVol:	0 0	0 0	0 0	0 0	0 0 0
Initial Fut.:	18 87	111 62	36 24	37 375	10 36 309
User Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00 1.00
PHF Adj:	0.95 0.95	0.95 0.95	0.95 0.95	0.95 0.95	0.95 0.95 0.95 0.95
PHF Volume:	19 91	117 65	38 25	39 395	10 38 325
Reduced Vol.:	0 0	0 0	0 0	0 0	0 0 0
Reduced Vol.:	19 91	117 65	38 25	39 395	10 38 325
PCE Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00 1.00
Final Vol.:	19 91	117 65	38 25	39 395	10 38 325
Saturation Flow Module:					
Adjustment:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00 1.00
Lanes:	0.09 0.40	0.51 0.51	0.29 0.20	1.00 0.97	0.03 1.00 1.62 0.00
Final Sat.:	47 220	281 249	143 97	523 556	15 514 915 2
Capacity Analysis Module:					
Vol/Sat:	0.41 0.41	0.41 0.26	0.26 0.26	0.26 0.07	0.71 0.71 0.07 0.35 0
Crit Moves:	****	****	****	****	****
Delay/Veh:	12.8 12.8	12.8 11.6	11.6 11.6	11.6 9.9	21.8 21.8 9.9 12.0 11
Delay Adj:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:	12.8 12.8	12.8 11.6	11.6 11.6	11.6 9.9	21.8 21.8 9.9 12.0 11
LOS by Move:	B B B B	B B A C	C C C C	A B	
ApproachDel:	12.8		11.6	20.7	11.7
Delay Adj:	1.00		1.00	1.00	1.00
ApprAdjDel:	12.8		11.6	20.7	11.7
LOS by Appr:	B	B	C	B	
AllWayAvgQ:	0.6 0.6	0.6 0.3	0.3 0.3	0.1 2.0	2.0 0.1 0.5 0

---

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Unsigned Method (Future Volume Alternative)

---

Intersection #2 Palm and 4th

---

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[ 12.9]

---

Approach:	North Bound			South Bound			East Bound			West Bound								
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R			
Movement:	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----			
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled			Uncontrolled					
Rights:	Include			Include			Include			Include			Include					
Lanes:	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	2	0	0

---

Volume Module:

Base Vol:	5	0	91	0	0	0	0	442	6	47	311	0
Growth Adj:	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.23	1.20	1.20	1.23	1.00
Initial Bse:	6	0	109	0	0	0	0	544	7	56	383	0
Added Vol:	0	0	0	0	0	0	0	32	0	0	33	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	0	109	0	0	0	0	576	7	56	416	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	0	115	0	0	0	0	606	8	59	437	0
Reduc Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	6	0	115	0	0	0	0	606	8	59	437	0

---

Critical Gap Module:

Critical Gp:	6.8	xxxxx	6.9	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxxx	3.3	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	2.2	xxxx	xxxxx

---

Capacity Module:

Cnflict Vol:	991	xxxxx	351	xxxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	648	xxxxx	xxxxx
Potent Cap.:	246	xxxxx	651	xxxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	948	xxxxx	xxxxx
Move Cap.:	226	xxxxx	628	xxxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	921	xxxxx	xxxxx
Volume/Cap.:	0.03	xxxxx	0.18	xxxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.06	xxxxx	xxxxx

---

Level Of Service Module:

2Way5thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	0.2	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	9.2	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*

---

Movement:

LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	574	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.8	xxxxx	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx
Shrd Conbal:	xxxxxx	12.9	xxxxx	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	12.9		xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B		*		*		*		*		*		*	

---

Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.4 Worst Case Level Of Service: C[ 15.6]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 14 0 9 9 540 0 0 349 8  
 Growth Adj: 1.00 1.00 1.00 1.05 1.05 1.05 1.05 1.23 1.00 1.00 1.23 1.05  
 Initial Bse: 0 0 0 15 0 9 9 664 0 0 429 8  
 Added Vol: 0 0 0 0 0 0 0 32 0 0 33 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 15 0 9 9 696 0 0 462 8  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 15 0 10 10 733 0 0 487 9  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 15 0 10 10 733 0 0 487 9  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol:xxxxx xxxx 897 xxxx 268 505 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.:xxxxx xxxx 283 xxxx 736 1070 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.:xxxxx xxxx 276 xxxx 724 1061 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap.:xxxxx xxxx 0.06 xxxx 0.01 0.01 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ:xxxxx xxxx xxxx xxxx xxxx 0.0 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 8.4 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.:xxxxx xxxx xxxx 365 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared Queue:xxxxx xxxx xxxx 0.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx xxxx xxxx 15.6 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* C \* \* \* \* \* \* \* \*  
 ApproachDel:xxxxx 15.6 xxxx xxxx xxxx  
 ApproachLOS: \* C \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #4 Palm and 5th  
 \*\*\*\*  
 Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[ 14.9]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 7 0 118 0 0 0 0 559 7 123 316 0  
 Growth Adj: 1.05 1.05 1.05 1.00 1.00 1.00 1.00 1.23 1.05 1.05 1.23 1.00  
 Initial Bse: 7 0 124 0 0 0 0 688 7 129 389 0  
 Added Vol: 0 0 0 0 0 0 0 32 0 0 33 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 7 0 124 0 0 0 0 720 7 129 422 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 8 0 130 0 0 0 0 757 8 136 444 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 8 0 130 0 0 0 0 757 8 136 444 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1275 xxxx 403 xxxx xxxx xxxx xxxx xxxx 775 xxxx xxxx  
 Potent Cap.: 161 xxxx 603 xxxx xxxx xxxx xxxx xxxx 850 xxxx xxxx  
 Move Cap.: 139 xxxx 593 xxxx xxxx xxxx xxxx xxxx 843 xxxx xxxx  
 Volume/Cap.: 0.06 xxxx 0.22 xxxx xxxx xxxx xxxx xxxx 0.16 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ:xxxxx xxxx xxxx xxxx xxxx 0.6 xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 10.1 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* \* \* \* B \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.:xxxxx 501 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared Queue:xxxxx 1.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx 14.9 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 14.9 xxxx xxxx xxxx  
 ApproachLOS: B \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
**Level Of Service Computation Report**  
 2000 HCM Unsigned Method (Future Volume Alternative)  
-----  
 Intersection #5 Palm and Rainbow Dr.  
-----  
 Average Delay (sec/veh): 3.3 Worst Case Level Of Service: D[ 33.1]  
-----  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 23 0 46 234 456 0 0 396 121  
 Growth Adj: 1.00 1.00 1.00 1.10 1.10 1.10 1.23 1.00 1.00 1.23 1.10  
 Initial Bse: 0 0 0 25 0 51 257 561 0 0 487 133  
 Added Vol: 0 0 0 0 0 0 32 0 0 0 33 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 25 0 51 257 593 0 0 520 133  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 27 0 53 271 624 0 0 547 140  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 27 0 53 271 624 0 0 547 140  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1491 xxxx 364 698 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 116 xxxx 639 908 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 88 xxxx 628 901 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap.: xxxx xxxx xxxx 0.30 xxxx 0.08 0.30 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx 1.3 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 10.7 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* B \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx xxxx xxxx 206 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxx xxxx xxxx 1.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx xxxx xxxx 33.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* D \* \* \* \* \* \* \*  
 ApproachDel: xxxxxx 33.1 xxxxxx xxxxxx  
 ApproachLOS: \* D \* \*  
-----  
 Note: Queue reported is the number of cars per lane.

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-----  
**Level Of Service Computation Report**  
 2000 HCM Unsigned Method (Future Volume Alternative)  
-----  
 Intersection #6 Palm and Carolina St.  
-----  
 Average Delay (sec/veh): 4.0 Worst Case Level Of Service: D[ 32.4]  
-----  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 98 0 49 0 0 0 0 0 458 14 35 408 0  
 Growth Adj: 1.05 1.05 1.05 1.00 1.00 1.00 1.00 1.00 1.05 1.05 1.23 1.00  
 Initial Bse: 103 0 51 0 0 0 0 0 563 15 37 502 0  
 Added Vol: 0 0 0 0 0 0 0 0 32 0 0 33 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 103 0 51 0 0 0 0 0 595 15 37 535 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 108 0 54 0 0 0 0 0 627 15 39 563 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 108 0 54 0 0 0 0 0 627 15 39 563 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1013 xxxx 353 xxxx xxxx xxxx xxxx xxxx xxxx 652 xxxx xxxx  
 Potent Cap.: 239 xxxx 649 xxxx xxxx xxxx xxxx xxxx xxxx 944 xxxx xxxx  
 Move Cap.: 227 xxxx 632 xxxx xxxx xxxx xxxx xxxx xxxx 936 xxxx xxxx  
 Volume/Cap.: 0.48 xxxx 0.09 xxxx xxxx xxxx xxxx xxxx xxxx 0.04 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.0 xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 289 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue:xxxxx 3.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx 32.4 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* D \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 32.4 xxxxxx xxxxxx xxxxxx  
 ApproachLOS: D \* \* \*  
-----  
 Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Palm and 7th

**Cycle (sec):** 60      **Critical Vol./Cap.(X):** 0.439  
**Loss Time (sec):** 16 (Y+R=4.0 sec)      **Average Delay (sec/veh):** 18.3  
**Optimal Cycle:** OPTIMIZED      **Level Of Service:** B

Approach:	North Bound			South Bound			East Bound			West Bound					
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
<b>Control:</b>	Split Phase			Split Phase			Protected			Protected					
<b>Rights:</b>	Include			Include			Include			Include					
<b>Min. Green:</b>	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
<b>Lanes:</b>	0	0	1!	0	0	0	1	0	0	1	0	1	1	0	1
<b>Volume Module:</b>															
Base Vol.:	48	34	84	4	10	26	19	453	15	41	385	3			
Growth Adj.:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.23	1.05	1.05	1.23	1.05			
Initial Bse.:	50	36	88	4	11	27	20	557	16	43	474	3			
Added Vol.:	0	0	0	0	0	0	0	32	0	0	33	0			
PasserByVol.:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut.:	50	36	88	4	11	27	20	589	16	43	507	3			
User Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj.:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
PHF Volume.:	53	38	93	4	11	29	21	620	17	45	533	3			
Reduced Vol.:	0	0	0	0	0	0	0	0	0	0	0	0			
Reduced Vol.:	53	38	93	4	11	29	21	620	17	45	533	3			
PCE Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
MLF Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Final Vol.:	53	38	93	4	11	29	21	620	17	45	533	3			
<b>Saturation Flow Module:</b>															
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Adjustment:	0.90	0.90	0.90	0.97	0.97	0.83	0.93	0.93	0.93	0.93	0.93	0.93			
Lanes:	0.29	0.20	0.51	0.29	0.71	1.00	1.00	1.95	0.05	1.00	1.99	0.01			
Final Sat.:	495	350	866	525	1311	1583	1769	3432	92	1769	3512	22			
<b>Capacity Analysis Module:</b>															
Vol/Sat.:	0.11	0.11	0.11	0.01	0.01	0.02	0.01	0.18	0.18	0.03	0.15	0.15			
Crit Moves:	***	***	***	***	***	***	***	***	***	***	***	***			
Green/Cycle:	0.21	0.21	0.21	0.08	0.08	0.08	0.16	0.36	0.36	0.08	0.28	0.28			
Volume/Cap:	0.51	0.51	0.51	0.10	0.10	0.22	0.08	0.51	0.51	0.31	0.54	0.54			
Uniform Del:	20.9	20.9	20.9	25.4	25.4	25.7	21.6	15.2	15.2	25.9	18.2	18.2			
IncremDel:	1.2	1.2	1.2	0.3	0.3	0.8	0.1	0.3	0.3	1.2	0.6	0.6			
InQueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Delay Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Delay/Veh:	22.1	22.1	22.1	25.7	25.7	26.5	21.8	15.5	15.5	27.1	18.7	18.7			
User DelAdj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
AdjDel/Veh:	22.1	22.1	22.1	25.7	25.7	26.5	21.8	15.5	15.5	27.1	18.7	18.7			
LOS by Move:	C	C	C	C	C	C	C	B	B	C	B	B			
HCM2kAvgQ!:	4	4	4	0	0	1	0	5	5	1	5	5			

Note: Queue reported is the number of cars per lane.

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-----  
Scenario Report

Scenario: LT PM  
Command: None  
Volume: LT PM  
Geometry: Existing  
Impact Fee: None  
Trip Generation: PM  
Trip Distribution: PM  
Paths: None  
Routes: Default Routes  
Configuration: Default Configuration

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-----  
Impact Analysis Report  
Level Of Service

Intersection	Base Del/ V/ LOS Veh	Future Del/ V/ LOS Veh	Change in C
# 1 Palm and 3rd	B 13.6 0.671	C 15.1 0.733	+ 0.062 V/C
# 2 Palm and 4th	B 14.7 0.000	C 15.3 0.000	+ 0.618 D/V
# 3 Palm and Corvina St.	C 15.1 0.000	C 15.7 0.000	+ 0.576 D/V
# 4 Palm and 5th	B 11.3 0.000	B 11.5 0.000	+ 0.233 D/V
# 5 Palm and Rainbow Dr.	E 36.7 0.000	E 43.1 0.000	+ 6.459 D/V
# 6 Palm and Carolina St.	C 17.6 0.000	C 18.6 0.000	+ 1.017 D/V
# 7 Palm and 7th	B 17.7 0.394	B 17.4 0.407	-0.314 D/V

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Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

\*\*\*\*\* Intersection #1 Palm and 3rd \*\*\*\*\*

Cycle (sec): 100 Critical Vol./Cap.(X): 0.733

Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 15.1

Optimal Cycle: 0 Level Of Service: C

\*\*\*\*\* Approach: North Bound South Bound East Bound West Bound \*\*\*\*\*

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign

Rights: Include Include Include Include

Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5

Lanes: 0 0 1! 0 0 0 0 1! 0 0 1 0 1 0 1 0 1 1

Volume Module:

Base Vol.:	13	14	64	21	13	22	15	303	17	117	371
Growth Adj.:	1.23	1.40	1.23	1.05	1.05	1.05	1.05	1.23	1.23	1.23	1.23
Initial Bse.:	16	20	79	22	14	23	16	373	21	144	456
Added Vol.:	0	0	0	0	0	0	0	33	0	0	32
PasserByVol.:	0	0	0	0	0	0	0	0	0	0	0
Initial Fut.:	16	20	79	22	14	23	16	406	21	144	488
User Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj.:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	17	21	83	23	14	24	17	427	22	151	514
Reduced Vol.:	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol.:	17	21	83	23	14	24	17	427	22	151	514
PCE Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	17	21	83	23	14	24	17	427	22	151	514

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.14	0.17	0.69	0.38	0.23	0.39	1.00	0.95	0.05	1.00	1.94
Final Sat.:	76	94	376	189	117	198	553	582	30	582	1237

Capacity Analysis Module:

Vol/Sat.:	0.22	0.22	0.22	0.12	0.12	0.12	0.03	0.73	0.73	0.26	0.42
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****
Delay/Veh:	10.5	10.5	10.5	10.2	10.2	10.2	9.2	22.2	22.2	10.9	12.0
Delay Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.5	10.5	10.5	10.2	10.2	10.2	9.2	22.2	22.2	10.9	12.0
LOS by Move:	B	B	B	B	B	B	A	C	C	B	B
ApproachDel:	10.5			10.2				21.8			11.8
Delay Adj.:	1.00			1.00				1.00			1.00
ApprAdjDel:	10.5			10.2				21.8			11.8
LOS by Appr.:	B			B				C			B
AllWayAvgQ:	0.2	0.2	0.2	0.1	0.1	0.1	0.0	2.3	2.3	0.3	0.7

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Unsigned Method (Future Volume Alternative)

---

Intersection #2 Palm and 4th

---

Average Delay (sec/veh): 1.5 Worst Case Level Of Service: C [15.3]

---

Approach:	North Bound			South Bound			East Bound			West Bound								
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R			
Movement:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled								
Rights:	Include			Include			Include			Include								
Lanes:	0	0	1!	0	0	0	0	0	0	0	1	1	0	1	0	2	0	0

---

Volume Module:

Base Vol:	11	0	48	0	0	0	0	387	10	92	519	0	0	0	0	0	0	0	
Growth Adj:	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.00	1.23	1.20	1.20	1.23	1.00	0	0	0	0	0	0
Initial Bse:	13	0	58	0	0	0	0	476	12	110	638	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	33	0	0	32	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	0	58	0	0	0	0	509	12	110	670	0	0	0	0	0	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	14	0	61	0	0	0	0	536	13	116	706	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	14	0	61	0	0	0	0	536	13	116	706	0	0	0	0	0	0	0	0

---

Critical Gap Module:

Critical Gp:	6.8	xxxxx	6.9	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	4.1	xxxx	xxxxx	0	0	0	0	0	0	0
FollowUpTim:	3.5	xxxxx	3.3	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	2.2	xxxx	xxxxx	0	0	0	0	0	0	0

---

Capacity Module:

Cnflict Vol:	1171	xxxxx	318	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	582	xxxx	xxxxx	0	0	0	0	0	0	0
Potent Cap.:	189	xxxxx	683	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1002	xxxx	xxxxx	0	0	0	0	0	0	0
Move Cap.:	165	xxxxx	659	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	973	xxxx	xxxxx	0	0	0	0	0	0	0
Volume/Cap.:	0.08	xxxxx	0.09	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxxx	0.12	xxxx	xxxxx	0	0	0	0	0	0	0

---

Level Of Service Module:

2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx	xxxx	0.4	xxxx	xxxxx	0	0	0	0	0	0	0	
Control Del:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx	xxxx	9.2	xxxx	xxxxx	0	0	0	0	0	0	0	
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*	0	0	0	0	0	0	0	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	423	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	
SharedQueue:	xxxx	0.6	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	
Shrd ConDel:	xxxx	15.3	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
ApproachDel:	15.3		xxxxx		xxxxx		xxxxx		xxxxx		xxxxx		xxxxx		xxxxx		xxxxx		xxxxx	
ApproachLOS:	C		*		*		*		*		*		*		*		*		*	

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Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.3 Worst Case Level Of Service: C[ 15.7]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 1 1 0  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Volume Module:  
 Base Vol: 0 0 0 4 0 10 12 408 0 0 615 22  
 Growth Adj: 1.00 1.00 1.00 1.05 1.05 1.05 1.05 1.23 1.00 1.00 1.23 1.05  
 Initial Bse: 0 0 0 4 0 11 13 502 0 0 756 23  
 Added Vol: 0 0 0 0 0 0 33 0 0 32 30 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 4 0 11 13 535 0 0 788 23  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 4 0 11 13 563 0 0 830 24  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 4 0 11 13 563 0 0 830 24  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1170 xxxx 447 864 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 189 xxxx 564 787 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 183 xxxx 555 781 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx xxxx 0.02 xxxx 0.02 xxxx xxxx xxxx xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx 9.7 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx xxxx xxxx 351 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue: xxxx xxxx xxxx 0.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx xxxx xxxx 15.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* C \* \* \* \* \* \* \*  
 ApproachDel: xxxxx 15.7 xxxxxx xxxxxx  
 ApproachLOS: \* C \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #4 Palm and 5th  
 \*\*\*\*  
 Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[ 11.5]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Volume Module:  
 Base Vol: 1 0 14 0 0 0 0 456 2 27 599 0  
 Growth Adj: 1.05 1.05 1.05 1.00 1.00 1.00 1.00 1.23 1.05 1.05 1.23 1.00  
 Initial Bse: 1 0 15 0 0 0 0 561 2 28 737 0  
 Added Vol: 0 0 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 1 0 15 0 0 0 0 594 2 28 769 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 1 0 15 0 0 0 0 625 2 30 809 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 1 0 15 0 0 0 0 625 2 30 809 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Capacity Module:  
 Cnflct Vol: 1111 xxxx 334 xxxx xxxx xxxx xxxx xxxx xxxx 637 xxxx xxxx  
 Potent Cap.: 206 xxxx 668 xxxx xxxx xxxx xxxx xxxx xxxx 956 xxxx xxxx  
 Move Cap.: 198 xxxx 657 xxxx xxxx xxxx xxxx xxxx xxxx 948 xxxx xxxx  
 Volume/Cap: 0.01 xxxx 0.02 xxxx xxxx xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx 8.9 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* \* \* A \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 569 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue: 0.1 xxxx  
 Shrd ConDel:xxxxx 11.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 11.5 xxxxxx xxxxxx  
 ApproachLOS: B \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #5 Palm and Rainbow Dr.  
 \*\*\*\*  
 Average Delay (sec/veh): 10.7 Worst Case Level Of Service: E[ 43.1]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 1! 0 0 1 0 2 0 0 0 0 1 1 0  
 Volume Module:  
 Base Vol: 0 0 0 85 0 223 85 355 0 0 372 54  
 Growth Adj: 1.00 1.00 1.00 1.10 1.10 1.10 1.23 1.00 1.00 1.23 1.10  
 Initial Bse: 0 0 0 94 0 245 94 437 0 0 458 59  
 Added Vol: 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 94 0 245 94 470 0 0 490 59  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 98 0 258 98 494 0 0 515 63  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 98 0 258 98 494 0 0 515 63  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx 6.8 xxxx 6.9 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1011 xxxx 309 588 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 239 xxxx 693 997 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 218 xxxx 681 989 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap.: xxxx xxxx xxxx 0.45 xxxx 0.38 0.10 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx 0.3 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 9.0 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx xxxx xxxx 429 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue: xxxx xxxx xxxx 7.9 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx xxxx xxxx 43.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* E \* \* \* \* \* \* \* \*  
 ApproachDel: xxxxxx 43.1 xxxxxx xxxxxx  
 ApproachLOS: \* E \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #6 Palm and Carolina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 1.0 Worst Case Level Of Service: C[ 18.6]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 1 0 1 0 2 0 0  
 Volume Module:  
 Base Vol: 28 0 26 0 0 0 0 438 49 31 449 0  
 Growth Adj: 1.05 1.05 1.05 1.00 1.00 1.00 1.00 1.23 1.05 1.05 1.23 1.00  
 Initial Bse: 29 0 27 0 0 0 0 539 51 33 552 0  
 Added Vol: 0 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 29 0 27 0 0 0 0 572 51 33 584 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 31 0 29 0 0 0 0 602 54 34 615 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 31 0 29 0 0 0 0 602 54 34 615 0  
 Critical Gap Module:  
 Critical Gp: 6.8 xxxx 6.9 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1025 xxxx 360 xxxx xxxx xxxx xxxx xxxx xxxx 666 xxxx xxxx  
 Potent Cap.: 234 xxxx 642 xxxx xxxx xxxx xxxx xxxx xxxx 933 xxxx xxxx  
 Move Cap.: 224 xxxx 625 xxxx xxxx xxxx xxxx xxxx xxxx 925 xxxx xxxx  
 Volume/Cap.: 0.14 xxxx 0.05 xxxx xxxx xxxx xxxx xxxx xxxx 0.04 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 9.0 xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 324 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue: xxxx 0.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx 18.6 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* C \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 18.6 xxxxxx xxxxxx xxxxxx  
 ApproachLOS: C \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #7 Palm and 7th  
 \*\*\*\*  
 Cycle (sec): 60 Critical Vol./Cap.(X): 0.407  
 Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 17.4  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5  
 Lanes: 0 0 1! 0 0 0 1 0 0 1 1 0 1 0 1 1 0  
 Volume Module:  
 Base Vol: 35 25 42 24 35 43 28 379 34 59 410 12  
 Growth Adj: 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1.23 1.05 1.05 1.23 1.05  
 Initial Bse: 37 26 44 25 37 45 29 466 36 62 504 13  
 Added Vol: 0 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 37 26 44 25 37 45 29 499 36 62 536 13  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 39 28 46 27 39 48 31 525 38 65 565 13  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 39 28 46 27 39 48 31 525 38 65 565 13  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Final Vol.: 39 28 46 27 39 48 31 525 38 65 565 13  
 Saturation Flow Module:  
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900  
 Adjustment: 0.91 0.91 0.91 0.96 0.96 0.83 0.93 0.92 0.92 0.93 0.93 0.93  
 Lanes: 0.34 0.25 0.41 0.41 0.59 1.00 1.00 1.87 0.13 1.00 1.95 0.05  
 Final Sat.: 593 423 711 742 1082 1583 1769 3269 234 1769 3446 81  
 Capacity Analysis Module:  
 Vol/Sat: 0.07 0.07 0.07 0.04 0.04 0.03 0.02 0.16 0.16 0.04 0.16 0.16  
 Crit Moves: \*\*\* \*\*\* \*\*\* \*\*\* \*\*\* \*\*\* \*\*\*  
 Green/Cycle: 0.16 0.16 0.16 0.09 0.09 0.09 0.16 0.39 0.39 0.09 0.32 0.32  
 Volume/Cap: 0.41 0.41 0.41 0.41 0.41 0.34 0.11 0.41 0.41 0.41 0.51 0.51  
 Uniform Del: 22.6 22.6 22.6 25.9 25.9 25.7 21.4 13.1 13.1 25.8 16.5 16.5  
 IncremmtDel: 1.0 1.0 1.0 1.7 1.7 1.5 0.2 0.2 0.2 1.7 0.4 0.4  
 InitQueuDel: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Delay/Veh: 23.6 23.6 23.6 27.6 27.6 27.2 21.5 13.3 13.3 27.5 16.9 16.9  
 User Deladj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 23.6 23.6 23.6 27.6 27.6 27.2 21.5 13.3 13.3 27.5 16.9 16.9  
 LOS by Move: C C C C C C C B B C B B  
 HCM2kAvgQ: 2 2 2 2 1 1 4 4 2 2 5 5  
 \*\*\*\*

Note: Queue reported is the number of cars per lane.

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LT + Project AM Wed Jan 23, 2008 11:13:02

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-----  
Scenario Report

Scenario: LT + Project AM  
Command: None  
Volume: LT AM  
Geometry: Project  
Impact Fee: None  
Trip Generation: AM  
Trip Distribution: AM  
Paths: None  
Routes: Default Routes  
Configuration: Default Configuration

LT + Project AM Wed Jan 23, 2008 11:13:03

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-----  
Impact Analysis Report  
Level Of Service

Intersection	Base Del/ LOS Veh	Future V/ C	Change in
# 1 Palm and 3rd	C 16.0 0.653	C 18.5 0.721	+ 0.068 V/C
# 2 Palm and 4th	C 15.8 0.000	C 16.5 0.000	+ 0.761 D/V
# 3 Palm and Corvina St.	C 19.6 0.000	C 21.0 0.000	+ 1.457 D/V
# 4 Palm and 5th	C 20.7 0.000	C 22.1 0.000	+ 1.402 D/V
# 5 Palm and Rainbow Dr.	D 31.2 0.000	D 34.9 0.000	+ 3.745 D/V
# 6 Palm and Carolina St.	D 27.4 0.000	D 30.5 0.000	+ 3.059 D/V
# 7 Palm and 7th	B 18.4 0.426	B 18.3 0.439	-0.148 D/V

LT + Project AM

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Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Palm and 3rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.721  
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 18.5  
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound	South Bound	East Bound	West Bound								
Movement:	L - T - R	L - T - R	L - T - R	L - T - R								
Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign								
Rights:	Include	Include	Include	Include								
Min. Green:	5 5 5 5 5 5 5 5 5 5 5 5											
Lanes:	0 0 1! 0 0 0 0 1! 0 0 1 0 0 0 1 0 0 1 0											
Volume Module:												
Base Vol:	15	62	90	59	34	23	35	279	8	29	224	69
Growth Adj:	1.23	1.40	1.23	1.05	1.05	1.05	1.23	1.23	1.23	1.23	1.23	1.05
Initial Bse:	18	87	111	62	36	24	37	343	10	36	276	72
Added Vol:	0	0	0	0	0	0	0	32	0	0	33	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	18	87	111	62	36	24	37	375	10	36	309	72
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	19	91	117	65	38	25	39	395	10	38	325	76
Reduc Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	19	91	117	65	38	25	39	395	10	38	325	76
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	19	91	117	65	38	25	39	395	10	38	325	76
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.09	0.40	0.51	0.51	0.29	0.20	1.00	0.97	0.03	1.00	0.81	0.19
Final Sat.:	45	210	267	234	135	91	516	548	14	514	462	108
Capacity Analysis Module:												
Vol/Sat:	0.44	0.44	0.28	0.28	0.07	0.72	0.72	0.07	0.70	0.70	0.70	0.70
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Delay/Veh:	13.3	13.3	13.3	12.0	12.0	12.0	10.0	22.5	22.5	10.0	21.2	21.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.3	13.3	13.3	12.0	12.0	12.0	10.0	22.5	22.5	10.0	21.2	21.2
LOS by Move:	B	B	B	B	B	B	C	C	B	C	C	
ApproachDel:	13.3			12.0			21.4			20.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	13.3			12.0			21.4			20.2		
LOS by Appr:	B		B		C		C					
AllWayAvgQ:	0.6	0.6	0.6	0.3	0.3	0.3	0.1	2.1	2.1	0.1	2.0	2.0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Unsigned Method (Future Volume Alternative)

Intersection #2 Palm and 4th

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: C[ 16.5]

Approach:	North Bound	South Bound	East Bound	West Bound								
Movement:	L - T - R	L - T - R	L - T - R	L - T - R								
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled								
Rights:	Include	Include	Include	Include								
Lanes:	0 0 1! 0 0	0 0 0 0 0	0 0 0 1 0	1 0 1 0 0								
Volume Module:												
Base Vol:	5	0	91	0	0	0	0	442	6	47	311	0
Growth Adj:	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.23	1.20	1.20	1.23	1.00
Initial Bse:	6	0	109	0	0	0	0	544	7	56	383	0
Added Vol:	0	0	0	0	0	0	0	32	0	0	33	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	0	109	0	0	0	0	576	7	56	416	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	0	115	0	0	0	0	606	8	59	437	0
Reduc Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	6	0	115	0	0	0	0	606	8	59	437	0
Critical Gap Module:												
Critical Gp:	6.4	xxxx	6.2	xxxxxx	xxxx	xxxxxx	xxxx	xxxx	xxxx	4.1	xxxx	xxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxxx	xxxx	xxxxxx	xxxx	xxxx	xxxx	2.2	xxxx	xxxx
Capacity Module:												
Cnflct Vol:	1198	xxxx	642	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	636	xxxx	xxxx
Potent Cap.:	207	xxxx	478	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	958	xxxx	xxxx
Move Cap.:	192	xxxx	465	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	940	xxxx	xxxx
Volume/Cap.:	0.03	xxxx	0.25	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.06	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	0.2	xxxx	xxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	9.1	xxxx	xxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT											
Shared Cap.:	xxxx	433	xxxx									
SharedQueue:	xxxx	1.1	xxxx									
Shrd ConDel:	xxxxx	16.5	xxxxx	xxxx								
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:	16.5		xxxxxx									
ApproachLOS:	C		*		*		*		*		*	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Unsigned Method (Future Volume Alternative)  
\*\*\*\*\*  
Intersection #3 Palm and Corvina St.  
\*\*\*\*\*  
Average Delay (sec/veh): 0.5 Worst Case Level Of Service: C[ 21.0]  
\*\*\*\*\*  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
-----|-----|-----|-----|-----|-----|-----|-----|  
Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
Rights: Include Include Include Include  
Lanes: 0 0 0 0 0 0 1! 0 0 1 0 1 0 0 0 0 1 0  
-----|-----|-----|-----|-----|-----|-----|-----|  
Volume Module:  
Base Vol: 0 0 0 14 0 9 9 540 0 0 349 8  
Growth Adj: 1.00 1.00 1.00 1.05 1.05 1.05 1.05 1.23 1.00 1.00 1.23 1.05  
Initial Bse: 0 0 0 15 0 9 9 664 0 0 429 8  
Added Vol: 0 0 0 0 0 0 0 32 0 0 33 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 0 0 0 15 0 9 9 696 0 0 462 8  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
PHF Volume: 0 0 0 15 0 10 10 733 0 0 487 9  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Final Vol.: 0 0 0 15 0 10 10 733 0 0 487 9  
Critical Gap Module:  
Critical Gp:xxxxx xxxx xxxx 6.4 xxxx 6.2 4.1 xxxx xxxx xxxx xxxx xxxx  
FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
-----|-----|-----|-----|-----|-----|-----|-----|  
Capacity Module:  
Cnflct Vol: xxxx xxxx xxxx 1264 xxxx 511 505 xxxx xxxx xxxx xxxx xxxx  
Potent Cap.: xxxx xxxx xxxx 189 xxxx 567 1070 xxxx xxxx xxxx xxxx xxxx  
Move Cap.: xxxx xxxx xxxx 184 xxxx 557 1061 xxxx xxxx xxxx xxxx xxxx  
Volume/Cap.: xxxx xxxx xxxx 0.08 xxxx 0.02 0.01 xxxx xxxx xxxx xxxx xxxx  
-----|-----|-----|-----|-----|-----|-----|-----|  
Level Of Service Module:  
2Way95thQ: xxxx xxxx xxxx xxxx xxxx 0.0 xxxx xxxx xxxx xxxx xxxx  
Control Del:xxxxx xxxx xxxx xxxx xxxx 8.4 xxxx xxxx xxxx xxxx xxxx  
LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
Movement: LT - LTR - RT  
Shared Cap.: xxxx xxxx xxxx 250 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
Shared Queue: xxxx xxxx xxxx 0.3 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
Shrd ConDel:xxxxx xxxx xxxx 21.0 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
Shared LOS: \* \* \* C \* \* \* \* \* \* \*  
ApproachDel: xxxxx 21.0 xxxxxx xxxxxx  
ApproachLOS: \* C \* \*  
\*\*\*\*\*  
Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Unsigned Method (Future Volume Alternative)  
\*\*\*\*\*  
Intersection #4 Palm and 5th  
\*\*\*\*\*  
Average Delay (sec/veh): 3.0 Worst Case Level Of Service: C[ 22.1]  
\*\*\*\*\*  
Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R  
-----|-----|-----|-----|-----|-----|-----|-----|  
Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
Rights: Include Include Include Include  
Lanes: 0 0 1! 0 0 0 0 0 0 0 1 0 1 0 1 0 0  
-----|-----|-----|-----|-----|-----|-----|-----|  
Volume Module:  
Base Vol: 7 0 118 0 0 0 0 559 7 123 316 0  
Growth Adj: 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1.23 1.05 1.05 1.23 1.00  
Initial Bse: 7 0 124 0 0 0 0 688 7 129 389 0  
Added Vol: 0 0 0 0 0 0 0 32 0 0 33 0  
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
Initial Fut: 7 0 124 0 0 0 0 720 7 129 422 0  
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
PHF Volume: 8 0 130 0 0 0 0 757 8 136 444 0  
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
Final Vol.: 8 0 130 0 0 0 0 757 8 136 444 0  
Critical Gap Module:  
Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
-----|-----|-----|-----|-----|-----|-----|-----|  
Capacity Module:  
Cnflct Vol: 1497 xxxx 781 xxxx xxxx xxxx xxxx xxxx xxxx 775 xxxx xxxx  
Potent Cap.: 136 xxxx 398 xxxx xxxx xxxx xxxx xxxx xxxx 850 xxxx xxxx  
Move Cap.: 118 xxxx 391 xxxx xxxx xxxx xxxx xxxx xxxx 843 xxxx xxxx  
Volume/Cap.: 0.07 xxxx 0.33 xxxx xxxx xxxx xxxx xxxx xxxx 0.16 xxxx xxxx  
-----|-----|-----|-----|-----|-----|-----|-----|  
Level Of Service Module:  
2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.6 xxxx xxxx  
Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 10.1 xxxx xxxx  
LOS by Move: \* \* \* \* \* \* \* \* \* \* \* B \* \* \*  
Movement: LT - LTR - RT  
Shared Cap.: xxxx 346 xxxx  
Shared Queue: 1.9 xxxx  
Shrd ConDel:xxxxx 22.1 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
Shared LOS: \* C \* \* \* \* \* \* \* \* \* \* \* \* \*  
ApproachDel: 22.1 xxxxxx xxxxxx  
ApproachLOS: C \* \* \*  
\*\*\*\*\*  
Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report  
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Palm and 7th

**Cycle (sec):** 60      **Critical Vol./Cap.(X):** 0.439  
**Loss Time (sec):** 16 (Y+R=4.0 sec)      **Average Delay (sec/veh):** 18.3  
**Optimal Cycle:** OPTIMIZED      **Level Of Service:** B

Approach:	North Bound			South Bound			East Bound			West Bound					
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
<b>Control:</b>	Split Phase			Split Phase			Protected			Protected					
<b>Rights:</b>	Include			Include			Include			Include					
<b>Min. Green:</b>	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
<b>Lanes:</b>	0	0	1!	0	0	0	1	0	0	1	0	1	1	0	1
<b>Volume Module:</b>															
Base Vol.:	48	34	84	4	10	26	19	453	15	41	385	3			
Growth Adj.:	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.23	1.05	1.05	1.23	1.05			
Initial Bse.:	50	36	88	4	11	27	20	557	16	43	474	3			
Added Vol.:	0	0	0	0	0	0	0	32	0	0	33	0			
PasserByVol.:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut.:	50	36	88	4	11	27	20	589	16	43	507	3			
User Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj.:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
PHF Volume.:	53	38	93	4	11	29	21	620	17	45	533	3			
Reduced Vol.:	0	0	0	0	0	0	0	0	0	0	0	0			
Reduced Vol.:	53	38	93	4	11	29	21	620	17	45	533	3			
PCE Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
MLF Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Final Vol.:	53	38	93	4	11	29	21	620	17	45	533	3			
<b>Saturation Flow Module:</b>															
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Adjustment:	0.90	0.90	0.90	0.97	0.97	0.83	0.93	0.93	0.93	0.93	0.93	0.93			
Lanes:	0.29	0.20	0.51	0.29	0.71	1.00	1.00	1.95	0.05	1.00	1.99	0.01			
Final Sat.:	495	350	866	525	1311	1583	1769	3432	92	1769	3512	22			
<b>Capacity Analysis Module:</b>															
Vol/Sat.:	0.11	0.11	0.11	0.01	0.01	0.02	0.01	0.18	0.18	0.03	0.15	0.15			
Crit Moves:	***	***	***	***	***	***	***	***	***	***	***	***			
Green/Cycle:	0.21	0.21	0.21	0.08	0.08	0.08	0.16	0.36	0.36	0.08	0.28	0.28			
Volume/Cap:	0.51	0.51	0.51	0.10	0.10	0.22	0.08	0.51	0.51	0.31	0.54	0.54			
Uniform Del:	20.9	20.9	20.9	25.4	25.4	25.7	21.6	15.2	15.2	25.9	18.2	18.2			
IncremDel:	1.2	1.2	1.2	0.3	0.3	0.8	0.1	0.3	0.3	1.2	0.6	0.6			
InQueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Delay Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Delay/Veh:	22.1	22.1	22.1	25.7	25.7	26.5	21.8	15.5	15.5	27.1	18.7	18.7			
User DelAdj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
AdjDel/Veh:	22.1	22.1	22.1	25.7	25.7	26.5	21.8	15.5	15.5	27.1	18.7	18.7			
LOS by Move:	C	C	C	C	C	C	C	B	B	C	B	B			
HCM2kAvgQ!:	4	4	4	0	0	1	0	5	5	1	5	5			

Note: Queue reported is the number of cars per lane.

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Scenario Report

Scenario: LT + Project PM  
  
Command: None  
Volume: LT PM  
Geometry: Project  
Impact Fee: None  
Trip Generation: PM  
Trip Distribution: PM  
Paths: None  
Routes: Default Routes  
Configuration: Default Configuration

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Impact Analysis Report  
Level Of Service

Intersection	Base Del/ V/ LOS Veh	Future Del/ V/ LOS Veh	Change in V/C
# 1 Palm and 3rd	C 18.4 0.767	C 21.8 0.827	+ 0.059 V/C
# 2 Palm and 4th	C 18.6 0.000	C 19.9 0.000	+ 1.316 D/V
# 3 Palm and Corvina St.	C 19.5 0.000	C 20.6 0.000	+ 1.118 D/V
# 4 Palm and 5th	B 13.9 0.000	B 14.5 0.000	+ 0.536 D/V
# 5 Palm and Rainbow Dr.	C 23.0 0.000	D 25.6 0.000	+ 2.613 D/V
# 6 Palm and Carolina St.	C 17.7 0.000	C 18.7 0.000	+ 1.003 D/V
# 7 Palm and 7th	B 17.7 0.394	B 17.4 0.407	-0.314 D/V

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Level Of Service Computation Report  
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Palm and 3rd

Cycle (sec): 100 Critical Vol./Cap.(X): 0.827  
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 21.8  
Optimal Cycle: 0 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound  
Movement: L - T - R L - T - R L - T - R L - T - R

Control:	Stop Sign	Stop Sign	Stop Sign	Stop Sign
Rights:	Include	Include	Include	Include
Min. Green:	5 5 5	5 5 5	5 5 5	5 5 5
Lanes:	0 0 1! 0 0	0 0 1! 0 0	1 0 0 1 0	1 0 0 1 0

Volume Module:

Base Vol:	13 14 64	21 13 22	15 303 17	117 371 1
Growth Adj:	1.23 1.40	1.23 1.05	1.05 1.23	1.23 1.23 1.05
Initial Bse:	16 20 79	22 14 23	16 373 21	144 456 1
Added Vol:	0 0 0	0 0 0	0 33 0	0 0 32
PasserByVol:	0 0 0	0 0 0	0 0 0	0 0 0
Initial Fut:	16 20 79	22 14 23	16 406 21	144 488 1
User Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
PHF Adj:	0.95 0.95	0.95 0.95	0.95 0.95	0.95 0.95 0.95
PHF Volume:	17 21 83	23 14 24	17 427 22	151 514 1
Reducut Vol:	0 0 0	0 0 0	0 0 0	0 0 0
Reduced Vol:	17 21 83	23 14 24	17 427 22	151 514 1
PCE Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Final Vol.:	17 21 83	23 14 24	17 427 22	151 514 1

Saturation Flow Module:

Adjustment:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Lanes:	0.14 0.17 0.69	0.38 0.23 0.39	1.00 0.95 0.05	1.00 0.97 0.00
Final Sat.:	74 91 366	184 114 193	550 580 30	581 622 1

Capacity Analysis Module:

Vol/Sat:	0.23 0.23	0.23 0.13	0.13 0.03	0.74 0.74	0.26 0.26	0.83 0.83	
Crit Moves:	****	****	****	****	****	****	
Delay/Veh:	10.8 10.8 10.8	10.4 10.4 10.4	10.4 9.3 22.5	22.5 10.9 28.7	28.7 10.9 28.7	28.7 10.9 28.7	
Delay Adj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	
AdjDel/Veh:	10.8 10.8 10.8	10.4 10.4 10.4	10.4 9.3 22.5	22.5 10.9 28.7	28.7 10.9 28.7	28.7 10.9 28.7	
LOS by Move:	B B B	B B B	A C C	B D D			
ApproachDel:	10.8		10.4	22.0		24.7	
Delay Adj:	1.00		1.00	1.00		1.00	
ApprAdjDel:	10.8		10.4	22.0		24.7	
LOS by Appr:	B	B	C	D			
AllWayAvg:	0.2 0.2	0.2 0.1	0.1 0.1	0.2 0.2	2.4 2.4	0.3 3.6	3.3

Note: Cycles reported is the number of cycles per lane.

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Level Of Service Computation Report  
2000 HCM Unsignalized Method (Future Volume Alternative)

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Intersection #2 Palm and 4th

---

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: Cf [19.9]

---

Approach:	North Bound			South Bound			East Bound			West Bound					
	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Movement:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled											
Rights:	Include	Include	Include	Include											
Lanes:	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1

---

Volume Module:

Base Vol:	11	0	48	0	0	0	0	387	10	92	519	0			
Growth Adj:	1.20	1.20	1.20	1.00	1.00	1.00	1.00	1.23	1.20	1.20	1.23	1.00			
Initial Bse:	13	0	58	0	0	0	0	476	12	110	638	0			
Added Vol:	0	0	0	0	0	0	0	33	0	0	32	0			
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	13	0	58	0	0	0	0	509	12	110	670	0			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
PHF Volume:	14	0	61	0	0	0	0	536	13	116	706	0			
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
Final Vol.:	14	0	61	0	0	0	0	536	13	116	706	0			

---

Critical Gap Module:

Critical Gp:	6.4	xxxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxx	4.1	xxxx	xxxxx			
FollowUpTim:	3.5	xxxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxx	2.2	xxxx	xxxxx			

---

Capacity Module:

Cnflct Vol:	1512	xxxxx	574	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	570	xxxx	xxxxx			
Potent Cap.:	134	xxxxx	522	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	1012	xxxx	xxxxx			
Move Cap.:	118	xxxxx	508	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	994	xxxx	xxxxx			
Volume/Cap.:	0.12	xxxxx	0.12	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	0.12	xxxx	xxxxx			

---

Level Of Service Module:

2Way95thQ:	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.4	xxxx	xxxxx			
Control Del:	xxxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	9.1	xxxx	xxxxx			
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*			
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	315	xxxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
SharedQueue:	xxxx	0.9	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	19.9	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	19.9		xxxxxx			xxxxxx			xxxxxx		xxxxxx		xxxxxx		
ApproachLOS:	C		*		*		*		*		*		*		

---

Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #3 Palm and Corvina St.  
 \*\*\*\*  
 Average Delay (sec/veh): 0.3 Worst Case Level Of Service: C[ 20.6]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 0 0 1! 0 0 1 0 1 0 0 0 0 1 0  
 Volume Module:  
 Base Vol: 0 0 0 4 0 10 12 408 0 0 615 22  
 Growth Adj: 1.00 1.00 1.00 1.05 1.05 1.05 1.05 1.23 1.00 1.00 1.23 1.05  
 Initial Bse: 0 0 0 4 0 11 13 502 0 0 756 23  
 Added Vol: 0 0 0 0 0 0 33 0 0 32 30 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 4 0 11 13 535 0 0 788 23  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 4 0 11 13 563 0 0 830 24  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 4 0 11 13 563 0 0 830 24  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx xxxx 6.4 xxxx 6.2 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1452 xxxx 862 864 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 145 xxxx 358 787 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 141 xxxx 352 781 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap.: xxxx xxxx xxxx 0.03 xxxx 0.03 0.02 xxxx xxxx xxxx xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 9.7 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx xxxx xxxx 247 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue: xxxx xxxx xxxx 0.2 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx xxxx xxxx 20.6 xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* \* \* \* C \* \* \* \* \* \* \*  
 ApproachDel: xxxxx 20.6 xxxxxx xxxxxx  
 ApproachLOS: \* C \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #4 Palm and 5th  
 \*\*\*\*  
 Average Delay (sec/veh): 0.3 Worst Case Level Of Service: B[ 14.5]  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 0 1 0 1 0 1 0 0  
 Volume Module:  
 Base Vol: 1 0 14 0 0 0 0 456 2 27 599 0  
 Growth Adj: 1.05 1.05 1.05 1.00 1.00 1.00 1.00 1.23 1.05 1.05 1.23 1.00  
 Initial Bse: 1 0 15 0 0 0 0 561 2 28 737 0  
 Added Vol: 0 0 0 0 0 0 0 33 0 0 32 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 1 0 15 0 0 0 0 594 2 28 769 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 1 0 15 0 0 0 0 625 2 30 809 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 1 0 15 0 0 0 0 625 2 30 809 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 Capacity Module:  
 Cnflct Vol: 1515 xxxx 646 xxxx xxxx xxxx xxxx xxxx xxxx 637 xxxx xxxx  
 Potent Cap.: 133 xxxx 475 xxxx xxxx xxxx xxxx xxxx xxxx 956 xxxx xxxx  
 Move Cap.: 128 xxxx 467 xxxx xxxx xxxx xxxx xxxx xxxx 948 xxxx xxxx  
 Volume/Cap.: 0.01 xxxx 0.03 xxxx xxxx xxxx xxxx xxxx 0.03 xxxx xxxx  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx 8.9 xxxx xxxx  
 LOS by Move: \* \* \* \* \* A \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 397 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 SharedQueue: 0.1 xxxx  
 Shrd ConDel:xxxxx 14.5 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* B \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 14.5 xxxxxx xxxxxx xxxxxx  
 ApproachLOS: B \* \* \*  
 \*\*\*\*  
 Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 -----  
 Intersection #5 Palm and Rainbow Dr.  
 -----  
 Average Delay (sec/veh): 6.6 Worst Case Level Of Service: D[ 25.6]  
 -----  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 0 0 1 0 0 0 1 0 1 0 0 0 0 1 0 1  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Volume Module:  
 Base Vol: 0 0 0 85 0 223 85 355 0 0 372 54  
 Growth Adj: 1.00 1.00 1.00 1.10 1.10 1.10 1.23 1.00 1.00 1.23 1.10  
 Initial Bse: 0 0 0 94 0 245 94 437 0 0 458 59  
 Added Vol: 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 0 0 0 94 0 245 94 470 0 0 490 59  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 0 0 0 98 0 258 98 494 0 0 515 63  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 0 0 0 98 0 258 98 494 0 0 515 63  
 Critical Gap Module:  
 Critical Gp:xxxxx xxxx 6.4 xxxx 6.2 4.1 xxxx xxxx xxxx xxxx xxxx  
 FollowUpTim:xxxxx xxxx 3.5 xxxx 3.3 2.2 xxxx xxxx xxxx xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Capacity Module:  
 Cnflct Vol: xxxx xxxx xxxx 1227 xxxx 535 588 xxxx xxxx xxxx xxxx xxxx  
 Potent Cap.: xxxx xxxx xxxx 199 xxxx 549 997 xxxx xxxx xxxx xxxx xxxx  
 Move Cap.: xxxx xxxx xxxx 181 xxxx 540 989 xxxx xxxx xxxx xxxx xxxx  
 Volume/Cap: xxxx xxxx xxxx 0.54 xxxx 0.48 0.10 xxxx xxxx xxxx xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx 2.8 xxxx 2.6 0.3 xxxx xxxx xxxx xxxx xxxx  
 Control Del:xxxxx xxxx xxxx 46.5 xxxx 17.6 9.0 xxxx xxxx xxxx xxxx xxxx  
 LOS by Move: \* \* \* E \* C A \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx  
 Shared Queue: xxxx  
 Shrd ConDel:xxxxx xxxx  
 Shared LOS: \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: xxxxxx 25.6 xxxxxx xxxxxx  
 ApproachLOS: \* D \* \* \*  
 -----

Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Unsigned Method (Future Volume Alternative)  
 -----  
 Intersection #6 Palm and Carolina St.  
 -----  
 Average Delay (sec/veh): 1.0 Worst Case Level Of Service: C[ 18.7]  
 -----  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Control: Stop Sign Stop Sign Uncontrolled Uncontrolled  
 Rights: Include Include Include Include  
 Lanes: 0 0 1! 0 0 0 0 0 0 0 1 0 1 0 2 0 0  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Volume Module:  
 Base Vol: 28 0 26 0 0 0 0 0 438 49 31 449 0  
 Growth Adj: 1.05 1.05 1.05 1.00 1.00 1.00 1.00 1.00 1.05 1.05 1.05 1.23 1.00  
 Initial Bse: 29 0 27 0 0 0 0 0 539 51 33 552 0  
 Added Vol: 0 0 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 29 0 27 0 0 0 0 0 572 51 33 584 0  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 31 0 29 0 0 0 0 0 602 54 34 615 0  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Final Vol.: 31 0 29 0 0 0 0 0 602 54 34 615 0  
 Critical Gap Module:  
 Critical Gp: 6.4 xxxx 6.2 xxxx xxxx xxxx xxxx xxxx 4.1 xxxx xxxx  
 FollowUpTim: 3.5 xxxx 3.3 xxxx xxxx xxxx xxxx xxxx 2.2 xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Capacity Module:  
 Cnflct Vol: 1025 xxxx 649 xxxx xxxx xxxx xxxx xxxx xxxx 666 xxxx xxxx  
 Potent Cap.: 263 xxxx 473 xxxx xxxx xxxx xxxx xxxx xxxx 933 xxxx xxxx  
 Move Cap.: 251 xxxx 466 xxxx xxxx xxxx xxxx xxxx xxxx 925 xxxx xxxx  
 Volume/Cap: 0.12 xxxx 0.06 xxxx xxxx xxxx xxxx xxxx xxxx 0.04 xxxx xxxx  
 -----|-----|-----|-----|-----|-----|-----|-----|  
 Level Of Service Module:  
 2Way95thQ: xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.1 xxxx xxxx  
 Control Del:xxxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 9.0 xxxx xxxx  
 LOS by Move: \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 Movement: LT - LTR - RT  
 Shared Cap.: xxxx 323 xxxx  
 Shared Queue: xxxx 0.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shrd ConDel:xxxxx 18.7 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx  
 Shared LOS: \* C \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  
 ApproachDel: 18.7 xxxxxx xxxxxx xxxxxx  
 ApproachLOS: C \* \* \*  
 -----

Note: Queue reported is the number of cars per lane.

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-----  
 Level Of Service Computation Report  
 2000 HCM Operations Method (Future Volume Alternative)  
 \*\*\*\*  
 Intersection #7 Palm and 7th  
 \*\*\*\*  
 Cycle (sec): 60 Critical Vol./Cap.(X): 0.407  
 Loss Time (sec): 16 (Y+R=4.0 sec) Average Delay (sec/veh): 17.4  
 Optimal Cycle: OPTIMIZED Level Of Service: B  
 \*\*\*\*  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R  
 Control: Split Phase Split Phase Protected Protected  
 Rights: Include Include Include Include  
 Min. Green: 5 5 5 5 5 5 5 5 5 5 5 5  
 Lanes: 0 0 1! 0 0 0 1 0 0 1 1 0 1 0 1 1 0  
 Volume Module:  
 Base Vol: 35 25 42 24 35 43 28 379 34 59 410 12  
 Growth Adj: 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1.23 1.05 1.05 1.23 1.05  
 Initial Bse: 37 26 44 25 37 45 29 466 36 62 504 13  
 Added Vol: 0 0 0 0 0 0 0 33 0 0 32 0  
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Initial Fut: 37 26 44 25 37 45 29 499 36 62 536 13  
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95  
 PHF Volume: 39 28 46 27 39 48 31 525 38 65 565 13  
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0  
 Reduced Vol: 39 28 46 27 39 48 31 525 38 65 565 13  
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Final Vol.: 39 28 46 27 39 48 31 525 38 65 565 13  
 Saturation Flow Module:  
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900  
 Adjustment: 0.91 0.91 0.91 0.96 0.96 0.83 0.93 0.92 0.92 0.93 0.93 0.93  
 Lanes: 0.34 0.25 0.41 0.41 0.59 1.00 1.00 1.87 0.13 1.00 1.95 0.05  
 Final Sat.: 593 423 711 742 1082 1583 1769 3269 234 1769 3446 81  
 Capacity Analysis Module:  
 Vol/Sat: 0.07 0.07 0.07 0.04 0.04 0.03 0.02 0.16 0.16 0.04 0.16 0.16  
 Crit Moves: \*\*\* \*\*\* \*\*\* \*\*\* \*\*\* \*\*\*  
 Green/Cycle: 0.16 0.16 0.16 0.09 0.09 0.09 0.16 0.39 0.39 0.09 0.32 0.32  
 Volume/Cap: 0.41 0.41 0.41 0.41 0.41 0.34 0.11 0.41 0.41 0.41 0.51 0.51  
 Uniform Del: 22.6 22.6 22.6 25.9 25.9 25.7 21.4 13.1 13.1 25.8 16.5 16.5  
 IncremntDel: 1.0 1.0 1.0 1.7 1.7 1.5 0.2 0.2 0.2 1.7 0.4 0.4  
 InitQueuDel: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0  
 Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 Delay/Veh: 23.6 23.6 23.6 27.6 27.6 27.2 21.5 13.3 13.3 27.5 16.9 16.9  
 User Deladj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
 AdjDel/Veh: 23.6 23.6 23.6 27.6 27.6 27.2 21.5 13.3 13.3 27.5 16.9 16.9  
 LOS by Move: C C C C C C C B B C B B  
 HCM2kAvgQ: 2 2 2 2 1 1 4 4 2 2 5 5  
 \*\*\*\*

Note: Queue reported is the number of cars per lane.

**APPENDIX F**

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Palm Avenue & Rainbow Drive

MUTCD 2003 California Supplement

Page 4C-3

**Figure 4C-101. Traffic Signal Warrants Worksheet (Sheet 1 of 4)**

11	SD DIST	NA CO	NA RTE	NA KPM	CALC CHK	KAF RKZ	DATE DATE	08/02/2007 08/16/2007
Major St: Palm Avenue					Critical Approach Speed Posted 56 km/h (35mi/h)			
Minor St: Rainbow Drive					Critical Approach Speed Posted 48 km/h (30mi/h)			
Critical speed of major street traffic > 64 km/h (40 mph)..... <input type="checkbox"/> In built up area of isolated community of < 10,000 population..... <input type="checkbox"/>					or <input type="checkbox"/> } RURAL (R) <input checked="" type="checkbox"/> } URBAN (U)			

---

**WARRANT 1 - Eight Hour Vehicular Volume**

**Condition A - Minimum Vehicle Volume**

100% SATISFIED YES  NO   
 80% SATISFIED YES  NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Hour							
	U	R	U	R	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	773	786	832	990	985	990	952	864
Highest Approaches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	132	152	137	223	315	331	320	195

**Condition B - Interruption of Continuous Traffic**

100% SATISFIED YES  NO   
 80% SATISFIED YES  NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Hour							
	U	R	U	R	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	773	786	832	990	985	990	952	864
Highest Approaches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	132	152	137	223	315	331	320	195

**Combination of Conditions A & B**

SATISFIED YES  NO

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	

**Figure 4C-101. Traffic Signal Warrants Worksheet (Sheet 2 of 4)****WARRANT 2 - Four Hour Vehicular Volume****SATISFIED\* YES  NO** 

Record hourly vehicular volumes for four hours.

APPROACH LANES	One 2 or More	Hour			
		15:00	16:00	17:00	18:00
Both Approaches - Major Street	X	990	985	990	952
Highest Approaches - Minor Street	X	223	315	331	320

\*All plotted points fall above the curves in MUTCD Figure 4C-1 or 4C-2.

Yes  No **WARRANT 3 - Peak Hour****PART A or PART B SATISFIED YES  NO** **PART A**

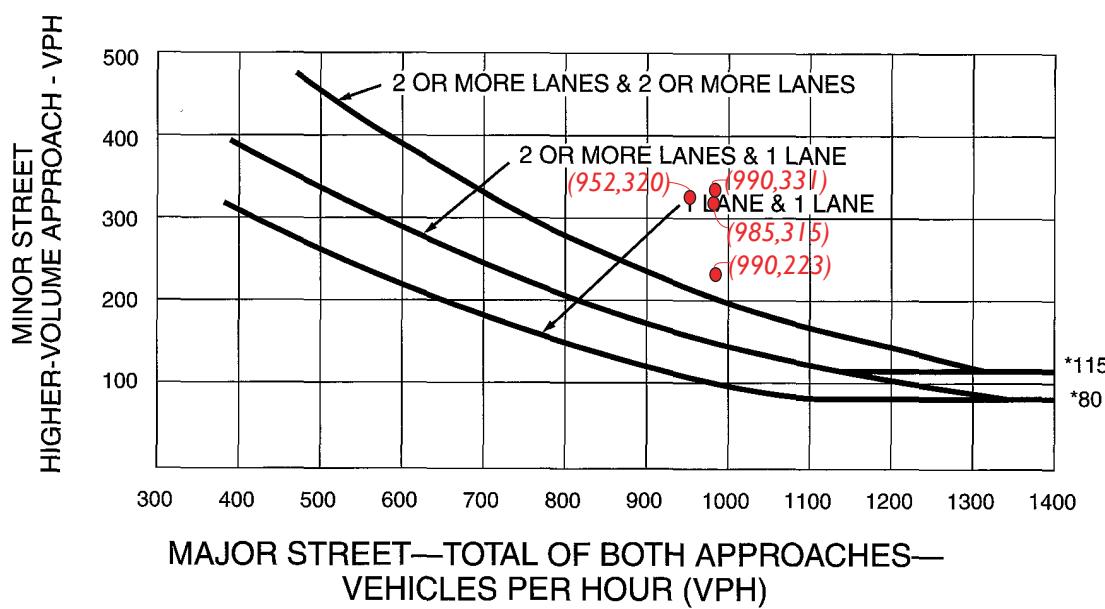
(All parts 1, 2, and 3 below must be satisfied)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.

**SATISFIED YES  NO** Yes  No Yes  No Yes  No **PART B****SATISFIED YES  NO** 

APPROACH LANES	One 2 or More	Hour			
		15:00	16:00	17:00	18:00
Both Approaches - Major Street					
Highest Approaches - Minor Street					

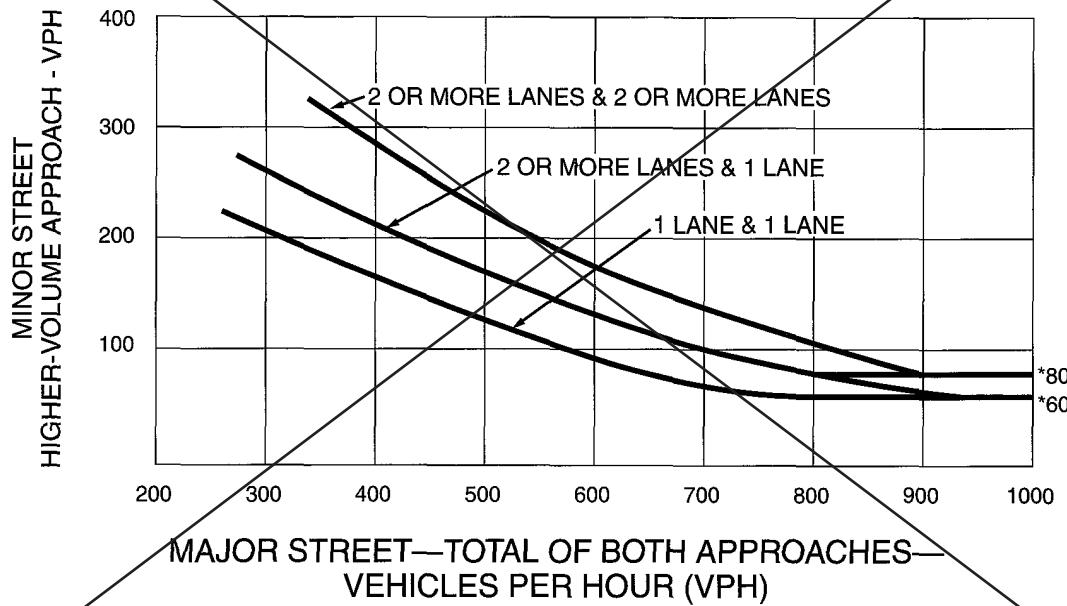
The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-3 or 4C-4.

**Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**

\*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)**

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)



\*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Appendix D**

**Air Quality Technical Report**

# **Air Quality Technical Report**

for the

## **Palm Avenue ECO Bikeway Project**

### **City of Imperial Beach**

*Submitted To:*

**Tierra Environmental Services  
9915 Businesspark Avenue, Suite C  
San Diego, CA 92131**

*Prepared By:*



**August 23, 2007**

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## **1.0 Introduction**

This report presents an assessment of potential air quality impacts associated with the proposed Palm Avenue ECO Bikeway Project in the City of Imperial Beach, California. The proposed project involves reducing Palm Avenue from four travel lanes to two travel lanes and to replace the travel lanes with bike lanes, increased sidewalk areas for pedestrians, landscaping, and on-street parking.

The project's air quality impacts will include emissions associated with construction of the bike lanes, sidewalk areas, landscaping, and parking, and the potential for increased air pollutant concentrations due to increased congestion associated with the reduced travel lanes.

## **2.0 Existing Conditions**

### 2.1 Regulatory Setting

Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several pollutants (called "criteria" pollutants). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

In September 1997, the EPA promulgated 8-hour O<sub>3</sub> and 24-hour and annual PM<sub>2.5</sub> national standards (particulate matter less than 2.5 microns in diameter). However, due to a lawsuit in May 1999, the United States District Court rescinded these standards and

the EPA's authority to enforce them. Subsequent to an appeal of this decision by the EPA, the United States Supreme Court in February 2001 upheld these standards. As a result, this action has initiated a new planning process to monitor and evaluate emission control measures for these pollutants. The EPA is moving forward to develop policies to implement these standards.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (ARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. In December 2002, the APCD submitted a maintenance plan for the 1-hour NAAQS for O<sub>3</sub> and requested redesignation from a serious O<sub>3</sub> nonattainment area to attainment. As of July 28, 2003, the San Diego Air Basin has been reclassified as an attainment area for the 1-hour NAAQS for O<sub>3</sub>. The 1-hour NAAQS was subsequently rescinded on July 15, 2005. On April 15, 2004, the SDAB was designated a basic nonattainment area for the 8-hour NAAQS for O<sub>3</sub>. The SDAB is in attainment for the NAAQS for all other criteria pollutants. The SDAB is currently classified as a nonattainment area under the CAAQS for O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the CAAQS. The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The

APCD is the local agency responsible for the administration and enforcement of air quality regulations for San Diego County.

The APCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County Regional Air Quality Strategy (RAQS) was initially adopted in 1991, and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, and most recently in 2004. The RAQS outlines APCD's plans and control measures designed to attain the state air quality standards for O<sub>3</sub>. The APCD has also developed the air basin's input to the SIP, which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards. The SIP includes the APCD's plans and control measures for attaining the O<sub>3</sub> NAAQS. The SIP is also updated on a triennial basis. The latest SIP update was submitted by the ARB to the EPA in 1998. The attainment schedule in the SIP called for the SDAB to attain the NAAQS for O<sub>3</sub> by 1999. The San Diego APCD has determined that the SDAB has achieved its O<sub>3</sub> attainment goal, and has applied to the EPA for redesignation as an O<sub>3</sub> attainment area. On July 15, 2005, the EPA rescinded the 1-hour O<sub>3</sub> standard. The SDAB has been designated as a basic nonattainment area for the new 8-hour NAAQS for ozone.

The RAQS relies on information from ARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of the County's General Plan. As such, projects that propose development that is consistent with the growth anticipated by the general plans and SANDAG's growth forecasts would be consistent with the RAQS and the SIP. In the event that a project would propose development which is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the general plan, a comparison with

SANDAG's growth projections for the Major Statistical Area can evaluate whether the project is consistent with the RAQS and SIP. If the project proposes growth that is not accounted for in SANDAG's growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.

The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The SIP also includes rules and regulations that have been adopted by the APCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for O<sub>3</sub>.

Table 1 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

## 2.2 Background Air Quality

The APCD operates a network of ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring stations to the project site is the Chula Vista station. Ambient concentrations of pollutants over the last three years are presented in Table 2.

The federal 8-hour ozone standard, which was formally adopted in 2001 after legal arguments with the EPA, was exceeded at the Chula Vista monitoring station once in 2004. The Chula Vista monitoring station measured exceedances of the state O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> standards during the period from 2004 to 2006. The data from the monitoring stations indicate that air quality is in attainment of all other NAAQS.

**Table 1**  
**Ambient Air Quality Standards**

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 hour <sup>a</sup>	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour	0.07 ppm (137 µg/m <sup>3</sup> )		0.08 ppm (157 µg/m <sup>3</sup> )	0.08 ppm (157 µg/m <sup>3</sup> )	
Carbon Monoxide	8 hours	9.0 ppm (10 mg/m <sup>3</sup> )	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m <sup>3</sup> )	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m <sup>3</sup> )		35 ppm (40 mg/m <sup>3</sup> )		
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	0.030 ppm (56 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 µg/m <sup>3</sup> )		--	--	
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m <sup>3</sup> )	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (365 µg/m <sup>3</sup> )	--	
	3 hours	--		--	0.5 ppm (1300 µg/m <sup>3</sup> )	
	1 hour	0.25 ppm (655 µg/m <sup>3</sup> )		--	--	
Respirable Particulate Matter (PM <sub>10</sub> )	24 hours	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		--	--	
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	15 µg/m <sup>3</sup>	--	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m <sup>3</sup>	--	
Sulfates	24 hours	25 µg/m <sup>3</sup>	Ion Chromatography	--	--	--
Lead	30-day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	
Hydrogen Sulfide Vinyl Chloride	24 hours	0.010 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography	--	--	--

ppm= parts per million

µg/m<sup>3</sup>= micrograms per cubic meter

mg/m<sup>3</sup>= milligrams per cubic meter

Source: California Air Resources Board 2007.

**Table 2**  
**Ambient Background Concentrations**  
**(ppm unless otherwise indicated)**

Pollutant	Averaging Time	2004	2005	2006	CAAQS	NAAQS	Monitoring Station
Ozone	8 hour	0.087	0.081	0.068	0.070	0.08	Chula Vista
	1 hour	0.097	0.093	0.084	0.09	N/A	Chula Vista
PM <sub>10</sub>	Annual	25.8 µg/m <sup>3</sup>	26.5 µg/m <sup>3</sup>	26.3 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>	N/A	Chula Vista
	24 hour	44 µg/m <sup>3</sup>	52 µg/m <sup>3</sup>	51 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Chula Vista
PM <sub>2.5</sub>	Annual	12.2 µg/m <sup>3</sup>	11.8 µg/m <sup>3</sup>	11.2 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Chula Vista
	24 hour	32.7 µg/m <sup>3</sup>	34.3 µg/m <sup>3</sup>	30.2 µg/m <sup>3</sup>	N/A	35 µg/m <sup>3</sup>	Chula Vista
NO <sub>2</sub>	Annual	0.016	0.016	0.017	0.030	0.053	Chula Vista
	1 hour	0.072	0.071	0.074	0.18	N/A	Chula Vista
CO	8 hour	2.48	2.13	2.20	9.0	9	Chula Vista
	1 hour	3.9	2.8	2.7	20	35	Chula Vista
SO <sub>2</sub>	Annual	0.003	0.003	0.003	N/A	0.03	Chula Vista
	24 hour	0.016	0.005	0.006	0.04	0.14	Chula Vista
	3 hour	0.021	0.009	0.009	N/A	0.5 <sup>1</sup>	Chula Vista
	1 hour	0.042	0.016	0.017	0.25	N/A	Chula Vista

<sup>1</sup>Secondary NAAQS

### 3.0 Thresholds of Significance

According to Appendix G of the State CEQA Guidelines, a project would have a significant environmental impact if it would:

- Conflict or obstruct the implementation of the San Diego Regional Air Quality Strategy (RAQS) or applicable portions of the State Implementation Plan (SIP);
- Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of PM<sub>10</sub> or exceed quantitative thresholds for O<sub>3</sub> precursors, oxides of nitrogen (NOx) and volatile organic compounds (VOCs);
- Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations; or

- Create objectionable odors affecting a substantial number of people.

Projects that propose development that is consistent with the growth anticipated by the general plans and/or SANDAG's growth forecasts would be consistent with the RAQS and SIP. Also, projects that are consistent with the SIP rules (i.e., the federally-approved rules and regulations adopted by the APCD) are consistent with the SIP. Thus projects would be required to conform with measures adopted in the RAQS (including use of low-VOC architectural coatings, use of low-NOx water heaters, and compliance with rules and regulations governing stationary sources) and would also be required to comply with all applicable rules and regulations adopted by the APCD.

To determine whether a project would (a) result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation; or (b) result in a cumulatively considerable net increase of PM<sub>10</sub> or exceed quantitative thresholds for O<sub>3</sub> precursors, oxides of nitrogen (NOx) and volatile organic compounds (VOCs), quantitative significance thresholds developed by the San Diego County Air Pollution Control District in Rule 20.2 for stationary sources are generally used to evaluate whether a project's emissions would have a significant impact on the ambient air quality.

The City of San Diego (City of San Diego 2007) has adopted quantitative thresholds to evaluate a project's potential for significant impact on the ambient air quality. These thresholds are derived from the San Diego APCD's Regulation II, Rule 20.2, Table 20-2-1, *Air Quality Impact Analysis (AQIA) Trigger Levels*. These thresholds are applicable as a screening criterion for potential significance. Because Rule 20.2 does not include trigger levels for ROG or PM2.5, thresholds were derived for these pollutants based on the attainment status of the San Diego Air Basin. The quantitative thresholds are provided in Table 3.

**Table 3**  
**Quantitative Significance Thresholds**

Pollutant	Lb/hr	Lb/day	Tons/yr
Carbon Monoxide (CO)	100	550	100
Oxides of Nitrogen (NOx)	25	250	40
Particulate Matter (PM <sub>10</sub> )	-	100	15
Fine Particulate Matter (PM <sub>2.5</sub> )	-	55	10
Oxides of Sulfur (SOx)	25	250	40
Lead and Lead Compounds	-	3.2	0.6
Reactive Organic Gases (ROG)	-	137	15

Source: City of San Diego 2007.

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality. Should emissions exceed the screening criteria, further evaluation may be warranted to evaluate whether the project's emissions would result in a significant impact on the ambient air quality.

In the event that emissions exceed these thresholds, modeling could be required to demonstrate that the project's total air quality impacts result in ground-level concentrations that are below the State and Federal Ambient Air Quality Standards, including appropriate background levels. For nonattainment pollutants (ozone, with ozone precursors NOx and VOCs), PM<sub>2.5</sub>, and PM<sub>10</sub>, if emissions exceed the screening-level thresholds shown in Table 3, the project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs) or Hazardous Air Pollutants (HAPs). If a project has the potential to result in emissions of any TAC or HAP which may expose sensitive receptors to substantial pollutant concentrations, the project would be deemed to have a potentially significant impact. With regard to evaluating whether a project would have a significant impact on

sensitive receptors, air quality regulators typically define sensitive receptors as schools (Preschool-12th Grade), hospitals, resident care facilities, or day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality.

With regard to odor impacts, a project that proposes a use which would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of offsite receptors.

The impacts associated with construction and operation of the project were evaluated for significance based on these significance criteria.

## **4.0 Impacts**

The proposed Palm Avenue ECO Bikeway Project includes both construction and operational impacts. Construction impacts include emissions associated with the replacement of travel lanes with bike lanes, increased sidewalk areas for pedestrians, landscaping, and on-street parking. Potential operational impacts would include emissions associated with traffic and the potential for increased pollutant concentrations due to the reduction of travel lanes along Palm Avenue.

### 4.1 Construction

Emissions of pollutants such as fugitive dust that are generated during construction are generally highest near the construction site. Emissions from the construction phase of the project were estimated through the use of emission factors from the URBEMIS model, Version 9.2.0, assuming that paving would be the only construction phase that would be required for the project. Paving was assumed to include installation of sidewalk area, striping of bike lanes, and inclusion of parking areas. Emissions associated with landscaping would generally be attributed to light-duty trucks and hand-held equipment. It was assumed that the project would require approximately 6 months to construct.

Table 4 provides a summary of the emission estimates for the construction phase of the proposed project. Refer to Appendix A for URBEMIS model outputs. As shown in the table, emissions associated with construction are below the significance thresholds for all construction phases and pollutants. Construction associated with the Palm Avenue ECO Bikeway Project would be short-term and temporary. Thus the emissions associated with construction would not result in a significant impact on the ambient air quality.

**Table 4**  
**Estimated Construction Emissions**

Emission Source	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
lbs/day						
<i>Paving</i>						
Paving Offgassing	0.05	-	-	-	-	-
Paving Off-road Diesel	2.22	13.27	7.15	0.00	1.15	1.06
Paving On-road Diesel	0.01	0.23	0.08	0.00	0.01	0.01
Worker Travel – Vehicle Emissions	0.07	0.13	2.22	0.00	0.01	0.01
<b>TOTAL</b>	<b>2.36</b>	<b>13.62</b>	<b>9.44</b>	<b>0.00</b>	<b>1.17</b>	<b>1.08</b>
Significance Criteria	137	250	550	250	100	55
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

Project construction would also not result in substantial emissions of any odor compounds that would cause a nuisance or significant impact to nearby receptors. The impacts associated with Project construction are therefore not considered significant.

#### 4.2 Operational Impacts

Operational impacts associated with the project are confined to the potential for air pollutant concentrations to increase due to increased congestion at intersections that would be affected by the project.

Based on the Traffic Impact Analysis (Katz, Okitsu & Associates 2007), the project itself would not generate additional traffic, and the forecasted volumes will remain unchanged at all segments and intersections.

The Transportation Project-Level Carbon Monoxide Protocol (hereinafter referred to as the “Protocol”) (California Department of Transportation 1997) indicates that CO “hot spots” have the potential to form for projects that have the potential to increase congestion. CO “hot spots” are typically evaluated when (a) the level of service (LOS) of an intersection or roadway decreases to a LOS E or worse; and (b) sensitive receptors such as residences, commercial developments, schools, hospitals, etc. are located in the vicinity of the affected intersection or roadway segment.

Table 5 provides a summary of the LOS with and without the Palm Avenue ECO Bikeway Project. As shown in Table 5, the project would not result in degradation in the LOS at affected intersections to LOS E or worse. Accordingly, no project-related exceedances of the CO standard are predicted, and the project would not cause or contribute to a violation of an air quality standard.

**Table 5**  
**Intersection Level of Service**

Intersection		Near Term			
		Scenario			
		Without Project		With Project	
		am	pm	am	pm
Palm Avenue and 3 <sup>rd</sup> Street		B	B	B	B
Palm Avenue and 4 <sup>th</sup> Street		B	B	B	B
Palm Avenue and Corvina Street		B	B	C	C
Palm Avenue and 5 <sup>th</sup> Street		B	B	C	B
Palm Avenue and Rainbow Drive		C	C	C	C
Palm Avenue and Carolina Street		C	B	C	C
Palm Avenue and 7 <sup>th</sup> Street		B	B	B	B
Horizon					
Intersection		Scenario			
		Without Project		With Project	
		am	pm	am	pm
Palm Avenue and 3 <sup>rd</sup> Street		B	B	C	C
Palm Avenue and 4 <sup>th</sup> Street		B	B	C	C
Palm Avenue and Corvina Street		B	B	C	C
Palm Avenue and 5 <sup>th</sup> Street		B	B	C	B
Palm Avenue and Rainbow Drive		D	E	D	C
Palm Avenue and Carolina Street		D	C	D	C
Palm Avenue and 7 <sup>th</sup> Street		B	B	C	B

## 5.0 Conclusions

The purpose of this Air Quality Impact Assessment was to evaluate the potential for a significant impact on the ambient air quality associated with construction and operation of the Palm Avenue ECO Bikeway in the City of Imperial Beach.

The proposed project would result in emissions of air pollutants for both the construction phase and operational phase of the project. The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction and operational emissions. Construction emissions would include emissions associated with paving, heavy construction equipment and construction worker commuting to and from the site. No adverse impacts to the ambient air quality are anticipated during project construction. Operations would not result in a significant air quality impact because the project would not degrade the LOS at any intersection to LOS E or worse. Air quality impacts are therefore less than significant.

## **6.0 References**

City of San Diego. 2007. Significance Determination Thresholds.

Katz, Okitsu & Associates. 2007. Palm Avenue ECO Bikeway Project – Traffic Impact Study. August.

Rimpo and Associates. 2007. URBEMIS Model, Version 9.2.0

**Appendix A**

**URBEMIS Model Outputs**

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Urbemis 2007 Version 9.2.0

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2\Projects\Palm Ave ECO Bikeway.urb9

Project Name: Palm Avenue ECO Bikeway

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>
Time Slice 1/1/2008-6/30/2008 Number Active Days: 130	<b><u>2.36</u></b>	<b><u>13.62</u></b>	<b><u>9.44</u></b>	<b><u>0.00</u></b>	<b><u>0.01</u></b>
Asphalt 01/01/2008-06/30/2008	2.36	13.62	9.44	0.00	0.01
Paving Off-Gas	0.05	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.22	13.27	7.15	0.00	0.00
Paving On Road Diesel	0.01	0.23	0.08	0.00	0.00
Paving Worker Trips	0.07	0.13	2.22	0.00	0.01

Phase Assumptions

Phase: Paving 1/1/2008 - 6/30/2008 - Default Paving Description

Acres to be Paved: 2.25

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
<b><u>1.16</u></b>	<b><u>1.17</u></b>	<b><u>0.00</u></b>	<b><u>1.07</u></b>	<b><u>1.07</u></b>	<b><u>1,184.63</u></b>
1.16	1.17	0.00	1.07	1.07	1,184.63
0.00	0.00	0.00	0.00	0.00	0.00
1.15	1.15	0.00	1.06	1.06	979.23
0.01	0.01	0.00	0.01	0.01	26.70
0.00	0.01	0.00	0.00	0.01	178.71